

CALIFORNIA STATE BOARD OF HEALTH

MONTHLY BULLETIN

Vol. 11

MARCH, 1916

No. 9

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MONTHLY BULLETIN

CALIFORNIA STATE BOARD OF HEALTH

Devoted to the Prevention of Sickness and Death

¶ Entered as second-class matter, August 15, 1905, at the post office at Sacramento, California, under the Act of Congress of July 16, 1894.

Sent free, on request, to any citizen of California.

WILBUR A. SAWYER, M.D., Secretary and Executive Officer	Editor
GUY P. JONES, Morbidity Statistician	Associate Editor

A Glorious Victory in the War on Typhoid.

Celebrate, all you three thousand one hundred and ninety-three citizens of California who would now be dead if the typhoid fever death rate had not been reduced by 70 per cent in the past nine years. Celebrate, all of you thirty thousand people who have been spared the suffering and expense of an attack of typhoid. Rejoice, all of you loyal Californians, in the victory over death and suffering which is represented by the fall in California's typhoid fever death rate to 9.7 per hundred thousand people. Let every community rejoice in proportion to its participation in the improvement, and prepare for a greater share in the next advance. If you are glad you are alive, exult!

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Why Not? If your child dies as the result of civic neglect, will you excuse your health officer when he tells you that he serves the city for nothing and saves taxes and gives the city as much as it pays for? Or will you thank him for accepting a trivial sum for permitting the use of his name as health officer when otherwise some one would have to be found to meet the duties of the office? Would you thank the State Board of Health for winking at the subterfuge and excusing him even from making weekly reports because his budget did not contain two cents a week for postage? You would not! Why not stir up a little sentiment for a square deal now, while your child is still alive?

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Why Accept the Position? The least that can be expected from a local health officer is that he send weekly morbidity reports regularly. And yet there are health officers in California who fail signally in this duty. When they find themselves in the shadow of the court, however, they spend more time writing excuses than it would have taken to make their reports in the first place. Some write that they are too busy to report. Others can not afford two cents a week

in postage. Why accept the position of health officer under these conditions? Why conspire in this way with the local authorities who violate the spirit of the law while technically appointing a health officer? Some of the inactive health officers have not yet fully realized that they are the local representatives of the State Board of Health and are by law held personally responsible for the fulfillment of their duties as public health officers.

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**One of the
Brightest Spots
on the Health Map.**

Congratulations, Palo Alto! You have been called "one of the brightest spots on the health map of the country" by the American Journal of Public Health. Your showing in the annual report of your enthusiastic full-time health officer, Mr. Harold F. Gray, had already attracted the attention of the State Board of Health, but we are glad to see your reputation for successful health administration, and low death rate, spreading beyond the boundaries of the State. May your example be emulated until we have a whole firmanent of "brightest spots."

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**Three Thousand
Nurses in Training.**

There are three thousand nurses in training in seventy-seven training schools in California. This means that within the next few years three thousand active exponents of sanitation and hygiene will enter into the practice of their profession. How great a factor the nurse is in public health is not comprehended by many persons. It is regrettable that California in her accredited training schools for nurses as yet gives no adequate special course in public health nursing. This field of work in California is very large and is growing year by year. If the California nurse desires instruction in public health nursing at the present time, she must go to Chicago, Philadelphia, Cleveland, New York or some other eastern city where such a course is given.

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**Care of Lepers
Still a Problem.**

The great need of a federal leprosarium is emphasized in the fact that two lepers confined in Los Angeles County recently escaped, in spite of restrictive measures. Last month a new case of leprosy was discovered in the person of a child in Oakland, and another case in the person of an American veteran of the Spanish war, designated by the San Francisco "Examiner" as "a man who can not go home today, tomorrow or ever." Few men render such service to their country as this veteran, who fought in the Philippines, remaining in Manila to help build up the fire department and who rendered valuable service during the big fire in Manila in 1904, and who, undoubtedly, contracted leprosy in the islands. He recently arrived in San Francisco from the East, where he has been employed as a railroad engineer. An effort is being made to return him to his eastern place of residence. The federal leprosarium is an absolute necessity, in order that these cases may be adequately cared for.

California Lags In Reports of Sickness.

Dr. John S. Fulton, Secretary of the Maryland State Board of Health, does not make very complimentary statements concerning the registration of sickness in California. As a matter of fact, California is behind most states of the Union in reporting cases of communicable disease. The old idea that giving publicity to cases of communicable disease hurts business, is a thing of the past. In these days people want to live in cities where the record of communicable disease is an open book. The cleaner the city, the better its sickness record. If California is to take her place in the list of states well advanced in sanitation, physicians and health officers must report all cases of communicable disease.

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Morbidity Reports More Complete.

With the beginning of the year a rigid system of follow-up letters to delinquent health officers was inaugurated, and already the reporting of communicable diseases has greatly improved. This will be news to those health officers who have been in the habit of doing full duty, but a considerable number of chronic offenders have already noticed the change in the aggressiveness and persistence of the Morbidity Clerk. He has been instructed to see that weekly morbidity reports are received from *all* health officers. California's bad reputation for incompleteness of morbidity reports must be corrected.

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Why Bakers' Cakes Taste Better Now.

If you are dependent upon the bakery for the cake that you eat, you may have noticed an improvement recently in the flavor of this product, for the California State Board of Health has, within the last few weeks, condemned many tons of decomposed eggs, most of which were frozen and placed in cold storage. Some bakers refuse to use such material, but many others apparently have no scruples in the matter. It was found that many of these eggs are shipped into California. They are broken and the meats are placed in tin cans, in which containers they are delivered to indiscriminating bakers.

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Many New Local Boards of Health.

New boards of health are being organized in some fifty cities of California. It was recently discovered that municipalities have become slack in the establishment of local boards of health, and the attention of city trustees has been called to the matter by the State Board of Health, with the result that new interest is being taken in local health matters. In St. Helena, Hermosa Beach, Compton, Chula Vista, San Gabriel, Corcoran and Montague health boards have recently been appointed in accordance with the law. The State Board of Health is doing all that is possible in co-operating with the members of these local boards in the administration of local health matters.

'No News Is Good News?' "Hang this communication up where you can see it, and should you not hear from me, just consider all is well," writes the health officer of a California city. This is even worse than a letter from another health officer which reads, "The officer receives no salary and some small expense and I have tried to mail reports at the end of each month." A close check upon communicable disease can not be maintained unless *every* health officer mails a report at the end of *every* week. The State Board of Health demands this report and will insist that health officers comply with its requirements.

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Chlorination Plants for River Towns. Antioch and Pittsburg have recently purchased chlorinating plants and there is every reason to believe that the numbers of cases of typhoid fever that have appeared in these cities every year will now be greatly diminished, if not eliminated altogether. In Sacramento, since the establishment of a chlorination plant, the number of typhoid deaths has been reduced greatly, although the number of cases of the disease that come into Sacramento from rural districts continues to make the typhoid rate rather high. Antioch and Pittsburg, because they do not receive so many imported cases, will not meet with this obstacle.

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College Park Votes to Connect Sewer. Residents of the College Park Sanitary District recently voted favorably upon a plan to connect the district sewerage system with the San Jose city sewer. This proposition carried three hundred to ten, and the residents of the College Park Sanitary District are to be congratulated for the stand they have taken in planning a necessary remedy for unsavory conditions that have obtained for so long in the disposal of sewage from the district.

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Typhoid Again Declared an Occupational Disease. The United States Circuit Court of Appeals for the Ninth Circuit recently handed down an opinion relating to the liability of an employer for typhoid fever contracted by an employee as a result of his employment. The opinion, written by Judge Ross, holds the employer liable for the disease contracted by the employee. In conclusion, the opinion reads, "A liability growing out of an accident which results in infecting the workman with a loathsome and dangerous disease and thereby causes him great and perhaps lasting physical injury would seem to be as much within the spirit and intent of the contract as if the injury had been caused by a blow or some other equally obvious manifestation of force."

**Baby-Week Observed
Throughout
California.**

Baby-Week was celebrated in many cities in California, among which were San Jose, Santa Barbara, Petaluma, Coalinga, Bakersfield, Grass Valley, Oakland, San Francisco, Los Angeles and many other cities. The California State Board of Health supplied literature for distribution to all of these cities. Much interest was raised in the campaign, and the week's work will, undoubtedly, form an incentive for regular work in the development of infant welfare throughout California.

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**Tuberculosis
Bill
Improved.**

The Kent tuberculosis bill has been amended so that stranded tuberculous patients can be returned to their home states at government expense when proper institutional treatment is available for them there. This gives the United States Public Health Service the alternatives, in many cases, of either paying half the cost of caring for the non-resident indigent tuberculous patient in an approved hospital or of making arrangements for his return to an institution in his home state. It looks as though the inhuman process of "dumping" tuberculous patients by one community or state on another were about to give way to systematic and sympathetic supervision of their management by the government whenever the State authorities request assistance. The bill has been reintroduced with the amendments in the House of Representatives and its number has been changed from H. R. 8532 to H. R. 11864. The number of the corresponding measure introduced in the Senate by Senator Norris remains unchanged, S. 3202. As the bill now stands it is about as perfect as it can be made and deserves universal support from those who wish to see an advance in the control of tuberculosis.

A VICTORY OVER TYPHOID FEVER.

In 1915 the typhoid fever death rate in California was reduced to 9.7 per 100,000 population, to almost as low a point as the State Board of Health had hoped to reach by 1918.

This means that California already stands high in the ranks of those states which are fighting typhoid successfully. In 1913, the last year for which complete statistics are available, only five states had typhoid death rates as low as 10 per 100,000 population.

It means that 3,193 deaths from typhoid fever have been prevented in the nine years since 1906, during which period the typhoid death rate has been reduced from 32.2 to 9.7 per 100,000 population.

It means, since less than one-tenth of typhoid fever cases are fatal, that over 30,000 cases were prevented during the same period.

It means that in 1915 there were but 276 deaths from typhoid fever in the whole of California.

It means that the typhoid death rate has been reduced by 29 per cent in the last year and by 70 per cent in nine years.

It means that California is succeeding admirably in the measures that she is directing against typhoid fever. Already the supervision of water supplies and sewage disposal, the inspection of summer resorts, the supervision of milk and food supplies, the investigation of typhoid outbreaks, the control of typhoid patients and carriers, and the use of typhoid vaccine, have together produced this very marked, this unexpectedly rapid improvement.

It means that several times as much death and sickness has been prevented as is shown by the typhoid fever statistics alone, for many other diseases are disseminated by those insanitary conditions which are responsible for the spread of typhoid fever. The typhoid fever death rate is a valuable index of the success of control measures against a large group of diseases.

By redoubled effort California can make further substantial reductions in the typhoid fever death rate.

BY 1918 CALIFORNIA SHOULD LEAD THE STATES IN TYPHOID CONTROL.

THAT COLD.

Willie, Willie! Come right into the house. Don't you know you've got a bad cold? Bring the children in here where it's warm.

Oh, Mrs. Jones, so glad to see you! The house looks dreadful, but do come in. All the children in the neighborhood are playing here today. Willie has a bad cold and I wouldn't let him stay out. He's sneezing all the time! I'll be glad when Monday comes and he can go back to school! Willie, shake hands with Mrs. Jones.

Willie, did you lose your handkerchief again? Go let Auntie wipe your nose with hers.

Willie, there's the door bell again. It's Mrs. Smith and her baby. You let them in and talk to them till I get dressed. Kiss the baby nicely.

Now Willie, be a good boy, my dear. Let Bob have a bite of your apple if he wants it.

All right, stop teasing, Willie, I'll let you go to the movies this afternoon if you won't make any fuss about getting clean for Sunday-school tomorrow. But bundle up warm before you start. Remember you have a bad cold.

Hello! Hello! Yes, I can hear, Daddy. You want to bring Mr. Black home to dinner. Yes, indeed. Come early so he can have a romp with Willie. I can manage. But don't forget that medicine for Willie's cold. His nose is running awfully tonight. Good-bye.

Don't play in that cold water, Willie, when you have such a cold. Now, go wipe your hands on the kitchen towel.

Willie, let Howard Green blow that whistle just once if he wants to. You've played with it all afternoon.

Willie, don't put those cards in your mouth. You'll get them dirty. Those are for Auntie's card club tonight. You mustn't spoil them.

* * * * *

Yes, Mrs. Green, Willie's gone back to school again. His ears are still aching some, but the doctor thinks that the drums won't burst. Pretty bad, though. Every one of us has been sick, but Willie was the worst. How's Harold's cold? Did you hear about poor Mrs. Smith? Her children all have dreadful colds, and the baby almost died of pneumonia. She was here the first day Willie was sick, with the baby, and not a thing on its head! My house was nice and warm, and I told her when she went out to cover up that baby's head, but you can't teach some people. Willie just loves the baby. It was too cute the way he hugged and kissed her that day.

All of Willie's friends have been having colds—Bobbie Black is awfully sick, Willie says. They're going to take out his tonsils as soon as he's better. Such a damp place they live in! Willie says all the children at school are sneezing. It's a drafty old building. Daddy says it's just as bad at his office. He had the first one, and since then all the other men have been sick. Daddy says it's cut down the efficiency of the office by half. Funny, too, in such a nice steam-heated building.

Did you hear what that woman who's just moved in next door said? I've been so mad ever since, I can scarcely look at her house. She had the impudence to say the reason her Precious Boy had a cold was that he came over and caught it from Willie. I'll see that they don't play together again, I can tell you. I know well enough where he got his cold. Didn't I hear her say that she made him take a bath every day? In this cold weather, too! Next she'll be saying Mrs. Smith's baby caught her pneumonia from Willie.

MASSACHUSETTS SUPPORTS TUBERCULOSIS BILL.

The following letter indicates the favorable attitude that many health departments are assuming in relation to the Kent bill, now before congress, providing for federal aid in caring for indigent, nonresident, tuberculous persons. The bill is meeting with a favorable reception in many parts of the country.

THE COMMONWEALTH OF MASSACHUSETTS.
STATE DEPARTMENT OF HEALTH.
BOSTON.

March 1, 1916.

DR. W. A. SAWYER,
*Secretary, State Board of Health,
Sacramento, Cal.*

Sir: I have the honor to inform you that, at a meeting of the Public Health Council of the State Department of Health held on February 16, 1916, it was voted that the council place itself on record as being in favor of legislation which would provide for federal aid for indigent persons afflicted with tuberculosis in state or other institutions, when such indigent persons are not citizens of the state where such institutions are located.

I am enclosing herewith a copy of the letter sent to Massachusetts congressmen relative to this matter.

By direction of the Commissioner of Health,

Yours truly,

(Signed) F. L. McCLOSKEY,
Secretary to the Council.

THE WORK OF THE CALIFORNIA STATE BOARD OF HEALTH IN THE EYES OF AN EXPERT.

Dr. Charles V. Chapin, Commissioner of Health in Providence, Rhode Island, was recently commissioned by the American Medical Association to make a survey of the work performed by state boards of health throughout the United States. Following are extracts from Doctor Chapin's report upon the work of the various departments of the California State Board of Health:

Vital Statistics.

"The registration of deaths is sufficiently accurate to place California among the registration states, though there is still room for improvement. Birth registration remains quite defective."

Bacteriological Work.

"The bacteriologic laboratory is doing excellent work, but if the epidemiologic work were properly developed it ought to do a great deal more than it is doing now. Typhoid vaccine is made and sent out in considerable quantity and a large number of antirabic treatments are given. There are three branch laboratories."

Foods and Drugs.

"The control of foods and drugs is placed in the health department and the laboratory is situated at the University at Berkeley. The prevention of adulteration is well done. The department, also, to some extent, looks after the cleanliness of markets, bakeshops, slaughter houses, etc. It also administers the cold storage law."

District Health Officers.

"As in many other states, the improvement of local health administration is at present the most important sanitary need of California. Two plans are suggested. One is to have a considerable number of full-time supervisors appointed by and paid by the State, and the other is to have them paid by the counties which make up the districts. Some such plan must be put in operation in order to make local health work really effective."

Educational Work.

"Educational work should be better systematized and more money devoted to it. Perhaps for the present, until a better registration of birth accurately localizes the problem, the campaign for the prevention of infant mortality, as well as the protection of child life, might be carried on by the bureau of education."

Control of Outbreaks.

"A very considerable number of state health departments make no particular effort to discover, or to intervene, in these outbreaks, but only take action, and that advisory only, when they are called on by local officials, or citizens, or when the conditions chance to be brought

to their notice. Among states which do more than this and really seek to discover outbreaks by a study of reports, of the daily press, and in other ways, may be mentioned California, Indiana, Kansas, Massachusetts, Minnesota, New Jersey, New York, Ohio, Pennsylvania, Virginia and Wisconsin."

Summer Hotels.

"Several state health departments have made some effort to improve the sanitary condition of summer hotels and cottage colonies. The sewage disposal is often very defective at such places, and typhoid outbreaks are not rarely traced to them. It was such an outbreak which led the Rhode Island legislature to pass an act in 1888 to provide for inspection by the State Board of Health. These inspections have been made at irregular intervals since. California also has an inspection law, but only one inspector, to cover this and other fields, which, if properly done, would occupy the time of many men."

PALO ALTO FAMOUS AS A HEALTH CITY.

The Journal of the American Public Health Association comments upon the record made by Palo Alto in its health department, and in a recent issue printed the following:

"The report of this city of 5,200 population is a graphic proof of the fact that a small community can accomplish as high-grade health work and produce as creditable and interesting a report as those of larger size. Under the efficient execution of Mr. Harold F. Gray, a well-balanced control has been exerted since the inauguration of a new policy, in 1910, which provided for a full-time health officer and funds for office and laboratory equipment and maintenance. Since that time approximately 50 cents per capita per annum has been expended for purely health purposes. The present report, for 1914, is bound up with the municipal reports for the fiscal year 1914-15, hence its delayed appearance. A statistical review of the results of the new regime shows a steady reduction of the death-rate, which now, with inclusion of deaths of residents occurring in an out-of-town hospital, stands at the very low figure of 6.5. The decrease has been most marked in those causes of death which are amenable to sanitary control, and the indication is that the expectancy of life at birth has been increased by from ten to fifteen years. While certain sanitary evils which are rife in larger, more urban places, do not exist in Palo Alto, it is evident that the health control there is of the first order and that this little city is one of the brightest spots on the health map of the country."

FLIES—THEIR HABITS AND CONTROL.

WILLIAM B. HERMS

Consulting Parasitologist for the California State Board of Health.

WHAT IS THE HOUSEFLY?

There are a number of species of flies which enter the house, among them the blue bottle, the green bottle, the stable fly, housefly, etc. The commonest of all is the housefly, **Musca domestica**. Over 98 per cent of all flies found indoors belong to the latter species, hence this fly is well-named. This species is also the commonest fly (proportion about the same as above) around manure piles, where it breeds. The common housefly is a medium-sized grayish fly, has a sucking proboscis, but is not able to prick the skin and suck blood as is the case with the stable fly, **Stomoxys calcitrans**. The housefly does not vary much in size; little flies are not baby flies, because flies do not grow after they have reached the winged state. They grow while in the maggot stage.

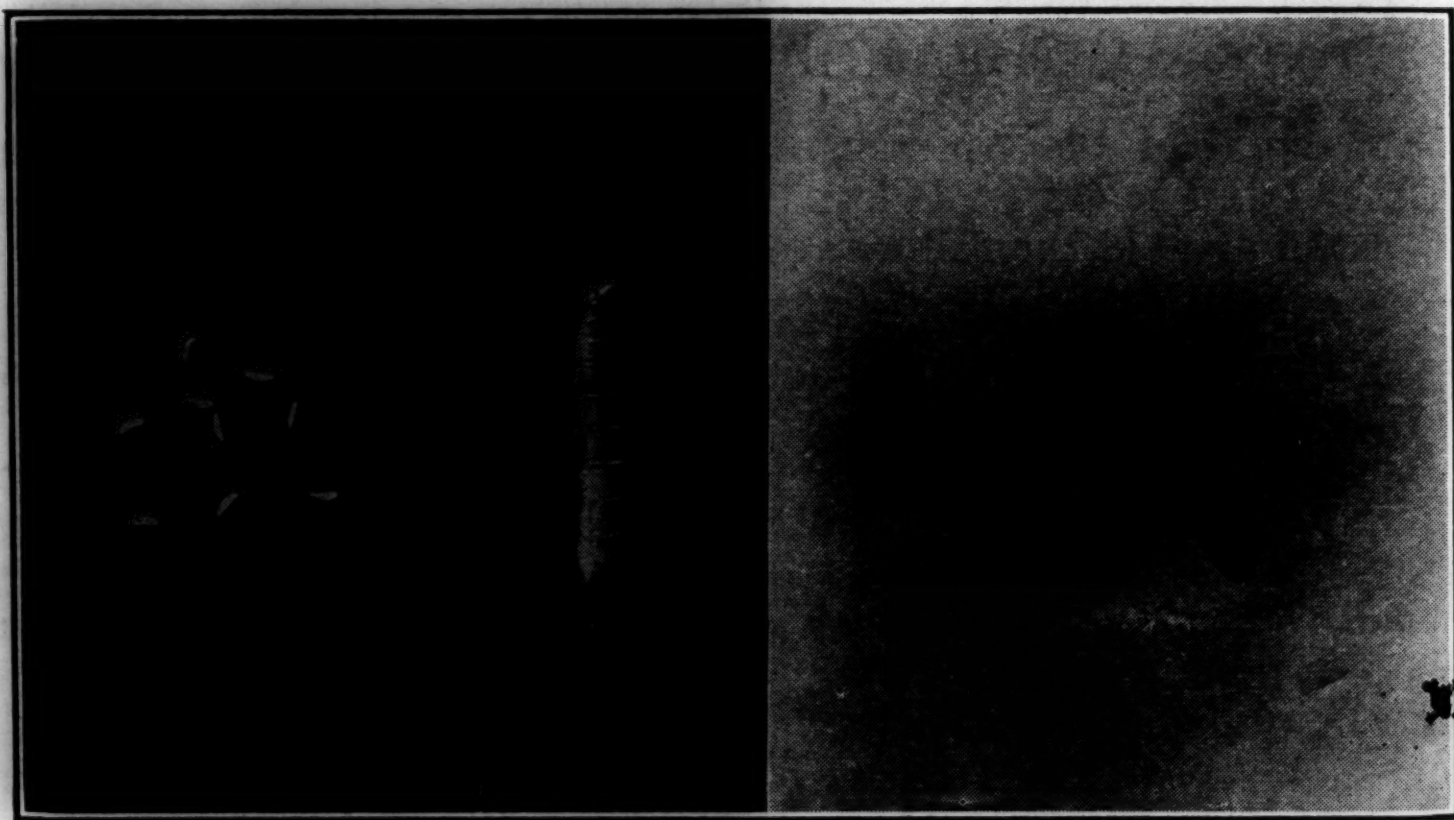


FIG. 1.—Photograph illustrating the life history of the common housefly. a. Egg stage; b. larval stage or maggot; c. resting stage or pupa; d. the adult female. (Original.)

LIFE HISTORY.

The female housefly deposits commonly from 75 to 125 eggs at a laying, and there may be three or four layings during the life of the insect. The eggs are tiny, glistening, white elongate objects just about visible to the naked eye. Egg masses are easily visible. These eggs are deposited by preference on heaps of rather fresh manure, in which about 95 per cent of all our flies originate.

The egg stage lasts from twelve to forty-eight hours, when the tiny maggots hatch and begin feeding on the manure. Notwithstanding the fact that a manure pile may be literally infested with maggots, no appreciable amount of manure is consumed, hence the fly can not be regarded as a good scavenger. The maggots grow rapidly in the

moist, warm manure. Dry, cool manure does not serve as a favorable breeding place for flies. The maggots ordinarily reach full growth, measuring then about one-half inch in length; in about four days they crawl into the drier parts of the manure pile, or leave the manure entirely to crawl beneath nearby debris, boards, platforms, etc., or into loose earth under or near the manure pile. Here they lie in a semidormant condition for two days or over, depending upon temperature conditions. An average manure pile has been found to harbor 685 maggots per pound, which means that if an allowance is made for parts not infested, there are commonly 900,000 maggots per ton of manure, all present at the same time. Surely common sense teaches us that it is far simpler to destroy 900,000 maggots in such a small area than it would be to wait until the flies have developed and try to catch or trap 900,000 flies distributed speedily over a very wide area.



FIG. 2.—The barnyard manure pile. The principal breeding place for the common housefly. A menace to health. Swat the manure pile!

After the maggot has remained in this semiresting stage for two days and over, it passes into the next stage, the **pupa**. The larva shortens, its skin hardens, and soon there is seen a chestnut colored, barrel-shaped object about one-quarter inch in length. In this pupa case the fly develops its wings, legs and other distinctive organs. The pupa stage requires only about four days in midsummer, longer if the temperature is low. At the end of this time the fly breaks out of the case, spreads its wings gradually and soon flies away.

Thus it will be seen that the fly requires but ten to twelve days under favorable conditions to develop from the egg to the fly (Fig. 1), and in from eight to ten days more is ready to lay eggs again. Hence there may be several generations of flies during the summer and in California flies are known to breed throughout the year in certain localities. Assuming that all the progeny live, it has been estimated that a single pair of flies would produce by the end of the summer

enough flies if pressed together to occupy a space over 14,000,000 cubic feet, equivalent to a building ten times as large as a six-story building 100 by 185 feet. Another writer has estimated the number of offspring at 191,011,000,000,000,000,000. Of course this never could happen, because the flies could not live for the sheer abundance of their own kind. At times we are almost persuaded that all have succeeded in living in some localities. The more flies a community can boast of the more unsanitary its condition must be. Flies are an indication of the presence of filth.

During the summer the average life of a fly is about thirty days, though flies may live over winter in a semidormant condition. These, together with others that overwinter as pupæ, are the responsible individuals when breeding begins in the spring. Knowing that the overwintering flies are responsible for the summer progeny, the time to **swat** is in the winter and early spring. During the rest of the year our slogan should be "**swat-the-manure-pile.**" (Fig. 2.)

OTHER BREEDING PLACES.

Stable yards and empty town lots used for horses are often a source of many flies. Here the droppings from the horses accumulate and are kept moist with urine, thus affording fairly good breeding places. **The stable yard and town lot used for horses must not be overlooked in the campaign against the housefly.** Merely sweeping up the manure with a broom after the removal of the manure pile, or superficial shoveling without scraping up the loose earth, will not remedy the matter entirely. It must be borne in mind that when the larvæ have fed sufficiently for full growth, that is, from four to five days, they crawl into the loose earth beneath the manure pile (often great pockets of larvæ may be found thus), or they wander to loose debris in the immediate vicinity; many, of course, remain in the drier portions of the manure pile to complete their life cycle. Thousands of pupas (recognized as chestnut colored, barrel-shaped individuals) were taken by the writer in one instance underneath a platform leading into a stable. Thus, when cleaning up, these conditions and situations must be taken into account.

Human excrement, if left uncovered, furnishes another good breeding ground for the housefly. Indiscriminate defecation in alleyways and out-of-the-way places should be considered a misdemeanor punishable by a heavy fine, for the reason that houseflies may breed in human excrement and especially because of the very great danger of disease transmission by the flies. In communities where there is no sewer system, sanitary flytight privies should be required by ordinance.

Where dairy cattle are fed on brewer's grain the waste is usually thrown away in small heaps in a nearby field, thus affording a famous breeding ground for flies. The writer has found such conditions to explain the great abundance of flies about certain certified dairies which were otherwise in excellent condition. All wastes of this kind should be spread out thin, so that the material may dry out quickly, thus preventing the development of flies.

Guinea pig pens, rabbit pens and chicken coops may become prolific breeders of flies if they are not carefully cleaned.

Kitchen refuse, decaying fruit, garbage dumps, in fact any organic material that is beginning to decompose, all afford breeding places for the housefly. **But the source of the fly as a real nuisance is the horse manure pile, pure and simple.**

RANGE OF FLIGHT.

Ordinarily under city conditions it may be safely said that where flies are abundant they have been bred in the same city block or in one immediately adjacent. The housefly can, however, use its wings effectively and may be carried by the wind, though it usually seeks protection very quickly when a strong breeze blows. Where houses are situated close together flies have the opportunity to travel considerable distances by easy flight, and they are often carried on meat and milk delivery wagons, garbage wagons, animals, etc. In the open country flies may travel more than 300 yards.

RELATION TO DISEASE.

We should be familiar with the actual method of disease transmission by the housefly. Some insects act as necessary intermediary hosts for disease-producing germs, which latter can not exist sexually and be transmitted without the agency of the insect, e. g., the malarial fever parasite (*Plasmodium vivax* and other species) which passes part of its life history in the body of the *Anopheles* mosquito. The housefly, as far as is known, is not an intermediary host necessary to the life of any pathogenic organism of humans, but is by accident of habit and structure one of the most important and dangerous of disease-transmitting insects. In habit the housefly is revoltingly filthy, feeding indiscriminately on excrement of all kinds, on vomit and sputum, and is, on the other hand, equally attracted to the daintiest foods of man, and will, if unhindered, pass back and forth between the two extremes. The housefly's proboscis (Fig. 3) is provided with a profusion of fine hairs, which serve as collectors of germs and filth; the foot (Fig. 4) of the fly, when examined under the microscope, presents an astonishing complexity of structure. Each of the six feet is equally fitted with bristly structures and pads, which secrete a sticky material, adding thus to



FIG. 3.—Head of the common housefly greatly enlarged. The proboscis is provided with numerous bristles and hairs and is consequently a good collector of filth and germs. (Original.)

the collecting powers. This structural condition, added to the natural vile habits of the housefly, completes its requirements as a transmitter of infectious diseases of certain types.

This creature has long been known to contaminate food, but has, nevertheless, been regarded as a scavenger, and thus as a real servant of man, but if there remains any doubt in the mind of the reader, after reading this and what follows, let him take the time to make a few careful observations for himself.

Circumstantial evidence against the housefly as a transmitter of such infectious diseases as typhoid fever, tuberculosis, dysentery, and cholera is complete as summed up thus: First, it possesses the best possible structures for the conveyance of "germs" and filth; second, it possesses the habit of feeding on excrementous matter of all kinds, vomit and sputum; third, the causative organism ("germs") of the

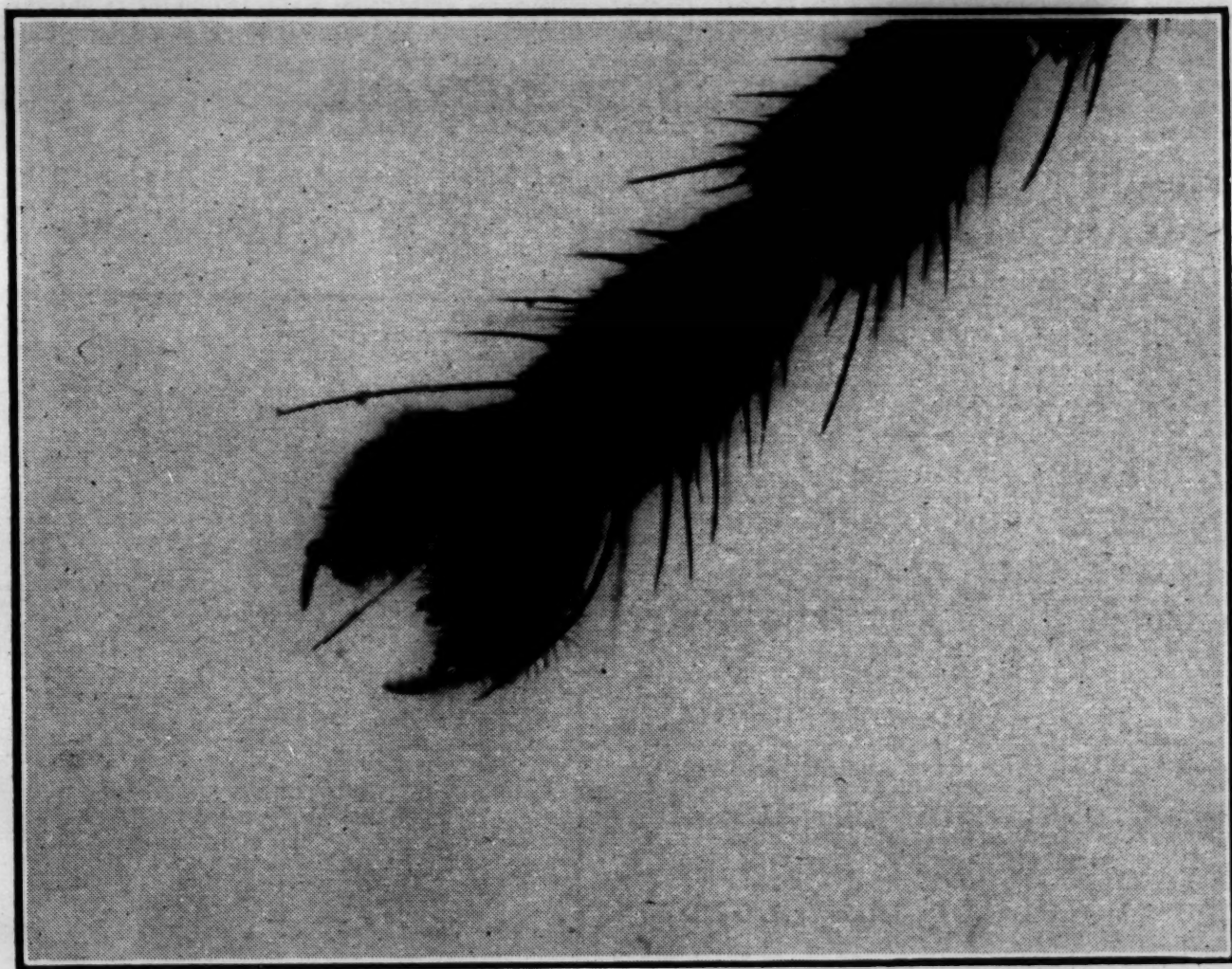


FIG. 4.—Foot of the common housefly. All six feet are equally good germ collectors, due to the profusion of hairs on the pads, augmented by a sticky secretion. (Enlarged from photograph.)

above named diseases are present in the matter mentioned in the second clause; fourth, the housefly is the principal fly found in dwellings, alighting upon the prepared food of man, or on food products in grocery stores, fruit stands, meat markets, etc.

Experimental evidence that the housefly actually does carry bacteria upon its mouthparts and feet or in its intestinal tract is not wanting.

From the observations previously stated it may be seen that the fly becomes infected by walking over infected materials, both its feet and wings becoming contaminated. The intestinal contents of flies become infected by feeding on infective material, and bacteria are dejected in the fly "specks." It furthermore seems plausible that flies might become infected in the larval stage by developing in infective faecal matter and that the newly emerged flies would already

be dangerous. Under experimental conditions blowflies have been infected by feeding the larvæ on meat infected with the spores of *Bacillus Anthracis* (Anthrax). It was found that the blowflies remained heavily infected for at least two days after emerging and that the bacillus could be cultivated either from the limbs or intestinal contents of the flies more than fifteen or nineteen days old.

Human foods are infected by flies primarily by direct contact through the touch of feet, proboscis, and wings, and secondly through fly "specks" (fæces), and finally flies grossly infect liquids by accidentally dropping into the fluid, especially milk.

The opportunity for flies to become infected is so great in all communities, even the most sanitary, that no fly should be trusted to alight on food prepared for human consumption. The following quotation from Nuttall, whose careful judgment is here considered, is directly to the point, viz: "It should be remembered that a fly may cause relatively gross infection of any food upon which it alights after having fed upon infective substances, be they typhoid, cholera, or diarrhea stools. Not only is its exterior contaminated, but its intestine is charged with infective material in concentrated form which may be discharged undigested upon fresh food which it seeks. Consequently, the excrement voided by a single fly may contain a greater quantity of the infective agents than, for instance, a sample of infected water. In potential possibilities the droppings of one fly may, in certain circumstances, weigh in the balance as against buckets of water or milk."

ECONOMIC CONSIDERATIONS.

Aside from the loss of life through typhoid fever and other diseases carried wholly or in part by the fly, an economic loss of importance, the annual loss to civilized man through the direct agency of the housefly must reach astonishing proportions. Dr. L. O. Howard estimates the cost of screening at over ten millions of dollars per annum for the United States, and the writer has estimated the cost of flytraps, sticky fly paper and fly poison at more than two millions of dollars annually. If this enormous amount were spent during only one year in controlling the fly at the right end of its life history, a second year would find a **saving** of several millions of dollars, not to mention the lives that would have been spared and the comfort wrought. In addition to the above, few persons realize the loss of efficiency occasioned by flies in their annoyance to employees in offices and school children in unscreened school rooms. Through rather careful observations made in the above connection the writer has reached the conclusion that a loss of 25 per cent in efficiency is frequently occasioned, a matter not to be overlooked in the campaign against flies.

ESSENTIALS OF CONTROL.

Methods of control are planned along the lines set forth in the study of the life history and habits of the insect. The more familiar we are with regard to these two factors, the better equipped are we to cope with the problems of control. The most vulnerable point in the life history must be determined, and then the most effective insecticide applied, or, what is better, the most useful preventive methods employed either in the elimination of the breeding place of the insect or the protection of the same by mechanical or chemical means to prevent the deposition of eggs, thus producing ultimately the local control of the species.

The housefly can be controlled without question. This is demonstrated by the scarcity of flies in localities where cleanliness about stables and houses prevails throughout a number of adjacent city blocks. The work of control can be greatly furthered by the individual citizen, but as is so well stated by the California State Board of Health in Bulletin No. 11 (1909), "This work can be done only by a united effort. The citizen must do the work, and should do it willingly, but, if negligent, the strong hand of the law should compel it." The citizen must, however, have instruction in the matter, because there exists the greatest ignorance relative to the life history and development of the housefly and disease-transmitting insects in general. The writer finds that this ignorance is as prevalent among the educated as among the uneducated.

The main facts pertaining to development and habits indicate the most desirable control measures to be pursued. If more than 95 per cent of our houseflies develop in the manure of horses, and there is no question that this is true, and the rest in kitchen refuse, garbage, excrement of man, etc., the point of attack is clearly outlined.

The manure pile **must** be abolished and stables **must** be kept clean. Houseflies breed in large numbers in the cracks of the stable and stall floors, where manure falls between. This calls for the use of cement, or other tight floor, with proper provision for drainage. Receptacles containing kitchen refuse must be kept tightly closed to prevent the female from depositing her eggs in the same.

Permanent preventive measures will always be far less expensive in the end, and also very much more effective than the application of temporary methods in the form of insecticides, which must be applied repeatedly, with continuous expenditure of time, labor, and money. Domesticated animals are necessary in our present civilization, but the methods of manure disposal and stable sanitation remain, in most cases, where they were a century or two ago.

SANITARY STABLE CONSTRUCTION.

Since the principal breeding places of the housefly are found in and around stables, particular attention must be paid here with special reference to the disposal of manure and urine. In the first place, the stable should have a cement concrete floor. The following extracts from Bulletin 97, North Dakota Agricultural Experiment Station, are to the point and give useful suggestions, viz: "The problem of providing a suitable floor for barns that is

low in first cost, yet durable and sanitary, is an important one. Cement concrete, although somewhat higher in first cost than wood, meets the requirements of a good floor better than any other available material, and the writer does not hesitate to recommend concrete floors for all types of barns. Concrete floors are considered best for several reasons. (1) They are economical because they are durable. Wooden floors last from three to five years with a maximum of about ten years, if of the best construction, while the durability of good concrete floors equals that of the building. (2) They save labor because of their evenness, which permits of thorough and easy cleaning. (3) They are sanitary not only because they can be kept clean, but because they are easily drained and are water-tight enough to exclude ground water and prevent the liquid manure from leaching into and polluting the soil.

The chief objections to concrete floors are that they are cold and slippery. To the first may be replied that in reality concrete is no colder than wood subjected to the same temperature, but on account of being a better conductor of heat, concrete carries away the bodily heat of the animals faster if they come in direct contact with it. This is not a serious objection, for even wood is too cold for animals to lie on without bedding, which should be supplied liberally on any floor. Straw is a poor conductor of heat and if a sufficient amount of bedding is used the bodily heat of the animals will be retained as well on concrete as on wood, which is apt to be more or less wet or soggy. A generous use of bedding is desirable, not only because it adds to the comfort of the animals, but because of the increased amount of manure, which in turn means increased fertility of the farm. The objection of slipperiness may be overcome by making the wearing surface scored or grooved into blocks before it has hardened. These sections made from 4 to 6 inches square furnish a good foothold for the animals and make a very neat appearance."

In constructing a concrete floor, provision must be made to carry away the urine from the animals, and water used in cleansing the floors and stalls. Suggestions from the above-named bulletin are here again useful, namely, the stall floors should be given a 1-inch drop from the manger to the manure gutter, which latter should be "6 inches deep and 14 inches wide. In order to facilitate the draining away of the liquids a 3-inch, U-shaped channel is sometimes made in the bottom of the gutter next to the manure alley, but this is not necessary where a slope is given the gutter bottom. The gutter should be given a uniform fall of 3 inches to 100 feet and the floor of the manure alley should have a slope towards the gutter of 1 inch to 10 feet. A small, water-tight liquid manure cistern may be provided outside the barn, into which the gutter drains, but if a manure shed is used the cistern should be in the shed. The gutter should be connected to the cistern by means of a drain pipe effectively trapped like the soil pipe in a house and so arranged that the trap may be easily cleaned." In cities with sewer facilities, connection is made directly with the sewer, dispensing with the manure cistern.

Often the concrete stall floors are covered with wood, so that the animals do not come in direct contact with the concrete. If such extra floors are provided, they should be made of heavy 2-inch strips, 3 inches wide and as long as the stall. The strips are fastened

together by cross pieces (ordinarily, flat iron) so that a space of about one-half inch remains between the strips. To facilitate ease of handling, it is strongly recommended that the floor be made in two long pieces, each half the width of the stall and fitting close where they join. In this way the superfloor can be lifted up while the concrete floor is being cleaned and the crevices between the wood strips can be readily freed from manure by means of a heavy stream of water or by means of an iron rod. If the crevices are not also frequently cleaned, fly larvæ will develop there very readily.

Manure and odors of manure will attract the female flies even though the stable is somewhat dark. The writer believes that the small extra cost of screening a stable against flies is a good investment, since it not only lessens the opportunity for flies to breed, but also adds to the comfort of the animals.

DISPOSAL OF MANURES.

Wherever horse manure is piled up in the open the opportunity is given for flies to breed. As before stated, it requires only about four days for the larvæ to reach full growth, after which they begin to migrate into the drier portions of the heap and out into the nearby debris, under platforms, etc. It is, therefore, imperative, if fly breeding is to be prevented, that manure be protected against flies from the beginning, or that it be rendered undesirable to flies, or that it be otherwise disposed of.

Under ordinary rural conditions the most practical method is to remove the manure to the field daily. A cart may be used for this purpose; it is daily backed up against the stable doorway, the manure thrown in and carted away at once to a field, where it is scattered. This saves much time and is sound agricultural practice. Since moisture and warmth are both necessary for the development of fly larvæ, the scattered manure can not serve this purpose.

If it is thought feasible, the manure may be placed each day in deep, narrow (preferably concrete-lined) trenches and daily covered with slaked lime and earth and allowed to rot. The disadvantage is that the manure must be dug up from the trenches later, when it is to be used as a fertilizer. However, the former method is more practical and is highly recommended. The Wisconsin Bulletin No. 221 states: "Manure is never so valuable as when perfectly fresh, for it is impossible under the best system of management to prevent all loss of its fertilizing ingredients. For this reason, whenever possible, the manure should be hauled directly to the field and spread. The system saves time and labor, as it involves handling but once. The manure will be leached by the rain and snow, nevertheless the soluble portion will be carried into the soil, where it is needed. When spread in a thin layer it will not heat, so there will be no loss from hot fermentation, and where manure simply dries out when spread on the ground, there is no loss of valuable constituents."

Farmers and gardeners who wish to use "rotted" manure for fertilizing purposes should screen the heaps until the "rotting" process is well under way, when fly breeding will be reduced to a minimum, or, as has already been suggested, the manure may be placed in trenches and covered with lime and earth each time fresh manure is added, or composting pits may be used.

MANURE BINS.

Under city conditions it is ordinarily impracticable to remove manure from the premises daily, hence it must be stored temporarily in special receptacles or bins. Heretofore stress has been laid on **fly-tight** receptacles, but unless exceptional care is exercised in operating such receptacles, they actually become fly-breeding cages. The writer early recognized this difficulty and suggested a remedy as here described.

To begin with, the bin should be built on a concrete floor to prevent rats from nesting underneath, or it should be elevated on legs as shown in Fig. 5. Ventilation should be provided for at both ends

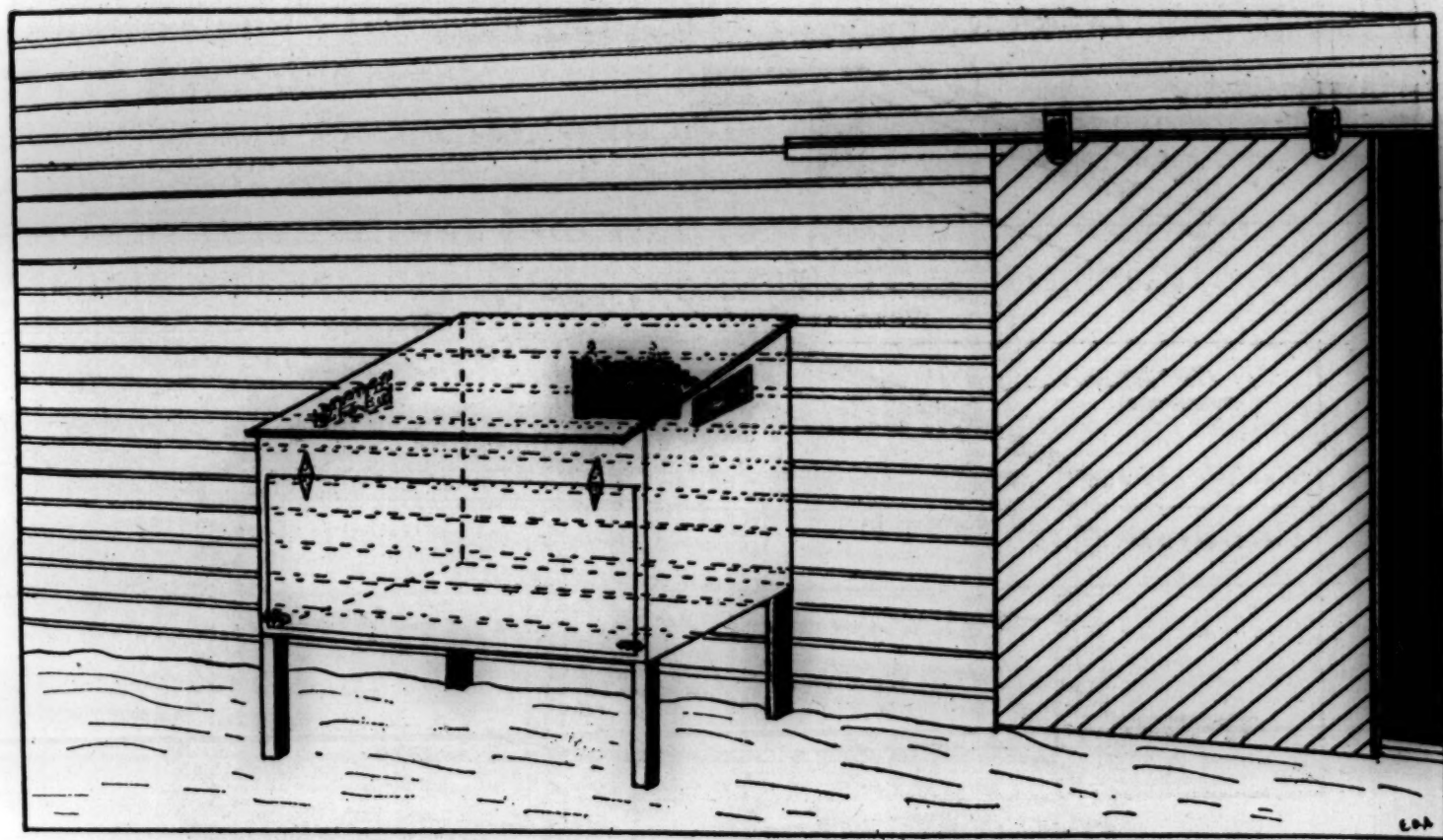


FIG. 5.—Showing a manure bin of proper construction. It opens directly into the stable, thus preventing flies from entering it on the outside. The manure is removed from in front by lifting hinged door.

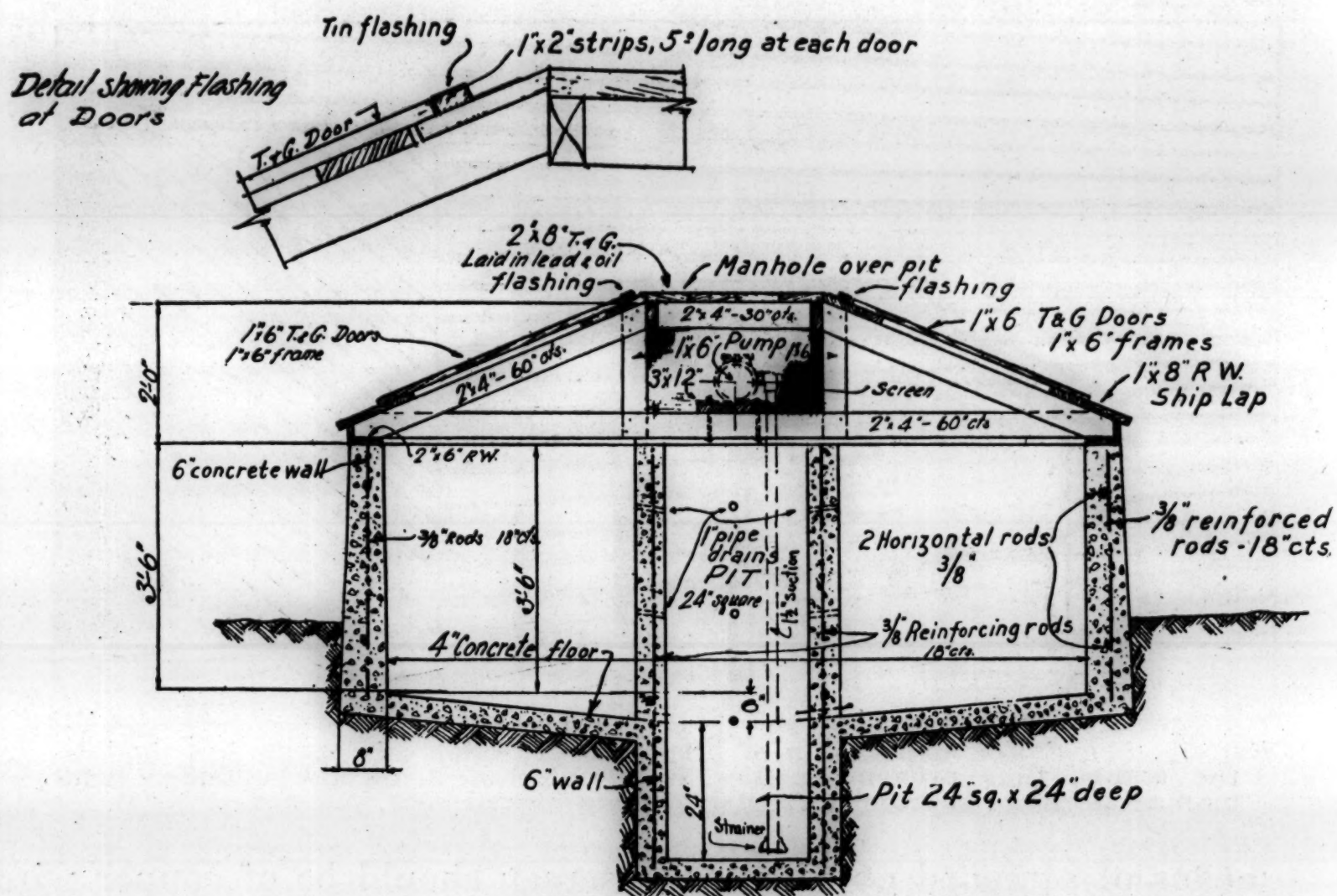
by means of screened openings; the screen should be of copper wire to prevent rapid rusting. The front of the bin is provided with a hinged door which lifts up so that the manure can easily be removed. The dimensions are approximately as follows: length, 8 feet; width, 4 feet; height in front, 4 feet; height in back, 5 feet. The bin should be thoroughly painted with creosote. The size of the bin depends on the number of horses stabled. The average horse produces about one and a half cubic feet of manure per day, including bedding.

To prevent the bin from becoming a fly-breeding cage, the writer recommends that there be a lid on top and that the manure be thrown into the bin directly from the stable through a small door cut through the stable into the bin near the top of the same. This opening can easily be provided with a small sliding, screened door. Furthermore, the bin should be built so that the small door last mentioned can be located in a dark part of the stable, thus further preventing flies from entering the bin. At a small added cost, flytraps can be attached at the ventilator ends of the bin in such a manner that chance flies in the box will enter these and be trapped. Because the flies go toward the light, they will naturally gather at the ventilator ends and enter the traps.

Manure may remain in the bin as long as there is room, when it should be permanently disposed of.

COMPOSTING PITS.

Composting pits are frequently used on country estates and truck gardens where quantities of rotted manure are used for fertilizing purposes. Such pits are usually made of concrete and covered with wood, all carefully constructed to exclude flies and mosquitoes, which latter may breed in the liquids collected in the sump. A properly constructed composting pit enables one to preserve the urine, which is very valuable, in addition to the more solid excreta.



CROSS SECTION THROUGH PIT.

FIG. 6.—Cross-section of a concrete fly-proof composting pit. (After Rosenthal.)

(From Advisory Pamphlet on Camp Sanitation and Housing, Commission of Immigration and Housing of California.)

A cross-section of a composting pit is shown in the figure (Fig. 6). In this case a pump is shown, by means of which the urine is pumped out of the sump and returned to the manure from time to time. Water should also be applied to the manure occasionally to prevent burning, which may otherwise destroy the salts so valuable in the fertilizer.

The size of the pit depends also on the number of horses stabled. A pit as shown in the figure with a length of sixty feet ought to store the manure from ten horses for a period of six months. The cost of such a pit of concrete construction, including labor, is estimated at from about \$360 to \$415.

GARBAGE CANS.

The writer has been impressed with the type of combined garbage can and flytrap invented by Professor C. F. Hodge, and described by him in "Nature and Culture," July, 1911, viz: "The principle of operation is that hungry flies will crawl in toward the smell of food through any dark crack and, after feeding, will fly out toward the light. They enter the garbage can or other receptacle by smell, and attempt to leave by sight. It is necessary to have the cover about half an inch larger in diameter. Three pieces of sheet iron are soldered together inside the rim, equidistant apart, to hold it up, a-crack, and keep it spaced out from the rim of the can about one-fourth of an inch all around. In a swill barrel, nails may be driven into the rim and bent over to hold the cover properly, **but direct light must not enter this crack.** Cut a hole in the cover at least three inches in diameter and fasten the trap over this opening according to plain directions sent out with each trap. With everything in the way of waste food material put into this receptacle, you establish a 'focus,' a 'vacuum cleaner' for flies, and properly managed, this will prove exterminative."

Where ordinary garbage cans are used, and certainly every household should possess a garbage receptacle that can be tightly closed against flies (unless above plan is followed), it is strongly urged that all liquids be drained from the refuse before disposing of it and that the solids be wrapped in a newspaper before placing in the can. In this way fly breeding in garbage cans may be effectively prevented, and an act of mercy is done the scavengers and others as well.

GARBAGE COLLECTION AND DISPOSAL.

Not only must the garbage can and its proper use be insisted upon in this connection, but also the proper collection of the garbage by the scavenger. Few sights are more disgusting than that of an open garbage wagon, reeking with its load of vile-smelling offal, swarming with flies. During the strawberry season it is a matter of daily occurrence to see the garbage wagon traveling side by side with the strawberry wagon, flies crossing and recrossing from one to the other; certainly revolting, if not also a menace to health.

Municipal collection of garbage in properly constructed city-owned garbage wagons will be the only solution of the present common outrageous system—a system which only puts the community under adverse criticism on the part of visitors, who expect something better, at least more modern, from an up-to-date California community.

No more sanitary way of disposing of garbage can be devised than that of incineration. The garbage **dump** will always be a fly producer, particularly if it receives manures and moist kitchen refuse.

THE SANITARY PRIVY.

In the absence of modern plumbing in the country home, particular attention should be paid to the location and construction of the outdoor toilet, which usually consists of a box privy with receptacle, or dug pit. No doubt much typhoid fever, diarrhea, dysentery, and hookworm disease is traceable to insanitary privies. Two important

matters are involved, namely, first, **location** so as to avert pollution of wells or other water supply, and secondly, **construction** so as to prevent flies from gaining access to the excreta, and to insure privacy.

Soil pollution is extremely dangerous, hence a **clean, accessible** privy is essential so as to avoid the further danger of delay in responding to the daily calls of nature.

A sanitary privy must meet the following requirements, according to the United States Department of Agriculture (Farmers' Bulletin 463—Stiles and Lumsden): "(1) The excreta must not touch the ground; hence some kind of water-tight receptacle (box, pail, tub, barrel, tank or vault) for the excreta must be used under the seat. (2) Domesticated animals must not have access to the night soil; therefore the privy should have a trapdoor in the back to exclude them. (3) Flies and other insects must not have access to the excreta; therefore the entire privy must be made rigidly flyproof, or some substance must be used in the receptacle to protect the contents from insects."

The reader is referred to Farmers' Bulletin 463, pp. 21-29, for plan and description of materials to build a sanitary privy, or to the California State Board of Health Monthly Bulletin for June, 1910.

Where the excreta is deposited in a pit or cesspool great care must be exercised in banking up around the outside of the house so as to prevent flies from gaining access to the pit. Furthermore, it becomes necessary to apply quantities of chloride of lime or crude oil or kerosene to the excreta at least twice a week during fly time.

If the privy is built on skids or can otherwise be easily moved, in addition to the treatment mentioned above, the collected excreta should be burned from time to time by adding straw and crude oil and setting it aflame.

FLY TRAPS.

Unless flytraps are used to capture the flies as they emerge from their breeding places, as already described, such measures are ordinarily only excuses for failing to observe the more important cleaning-up process; the entrapped flies have ordinarily already had ample opportunity to carry filth and germs and deposit their eggs. However, traps may be useful adjuncts to other more permanent corrective measures—the more flies captured the better—but the trapping should begin early in the spring in order to capture the early flies which are responsible for the later multiplied millions of the same species. Many good flytraps are on the market and these may be baited with milk-soaked bread, the juice of crabs, stale beer, etc.

INSECTICIDES ON MANURE PILES.

The writer is constantly requested to recommend insecticides that may be applied directly to manure in order to either destroy fly larvæ or prevent fly breeding. He has for some time consistently refrained from making such recommendations, because, in the first place, such methods seem to be accepted as a substitute for cleaning up, and, in the second place, owing to the necessity for constant

application, they would certainly be neglected and the expense of daily use of insecticides in efficient strengths is forbidding to the man of ordinary means.

Ordinary applications of the usual insecticides prove of no avail. The cheapest, and at the same time most effective preparations, must be applied two to five times as strong as when used against other insects, and furthermore the larvæ can not easily be reached, buried as they are in the straw and manure. In the face of these conditions the more reliable and really cheaper methods already mentioned are recommended.

Chemicals used to destroy the larvæ may be roughly divided into two classes, viz: (1) contact poisons; and (2) stomach poisons. To the first class belong such preparations as kerosene, chloride of lime, etc. To the second class belong the arsenicals represented by arsenate of lead and paris green.

During the past four or five years in an experimental study of a large number of insecticides as applied to fly larvæ, the writer in co-operation with several of his students has found that few of these materials can be recommended, owing to inefficiency, expense, danger to life of man and beast, fire or other factor. There are a number of materials which have been advertised as efficient in the control of fly larvæ, but have been experimentally shown to be without virtue, namely, pyroligneous acid, gypsum and iron sulphate. On the other hand, the following materials, among others, have been found effective, namely, carbolic acid, 1 to 2½ per cent; creolin, 5 per cent; kerosene emulsion, 1 to 5; potassium dichromate, 20 per cent; sodium cyanide, 1 per cent solution (very dangerous); chloronaphtholeum, 1 to 200, and saturated solution of borax.

The United States Department of Agriculture recommends applying .62 pound borax or .75 pound calcined colemanite to every eight bushels (10 cu. ft.) of manure immediately on its removal from the barn. The borax is to be applied by means of a flour sifter to the outer edges of the pile and sprinkled with two or three gallons of water. It is said that borax at the rate suggested will not injure the manure as a fertilizer.

In applying any of the above materials, and others already mentioned, to the manure for the destruction of fly larvæ, two things must be borne in mind, namely, (1) that the manure pile must be drenched in order that the chemical may reach the individual larvæ, and (2) the effect which the chemical will have on the fertilizing value of the manure.

FLY POISONS.

Because of the disease-transmitting powers of flies they should be kept away from human food. Tight-fitting screens must continue to be used until the community as a whole learns to apply the simple measures for the control of the fly, when screens will no longer be needed, and that time is not far off. The use of poisonous (arsenical and cobalt) preparations upon which the flies may feed, is not recommended, inasmuch as the poisoned insects often drop into foods, and, what is more important, many of these preparations are a menace to human life, especially to small children. The writer

has found (as already suggested by others) that formaldehyde, properly used, forms a very good substitute for arsenical or cobalt poisons. Various dilutions and combinations were tried, but a 2 per cent solution sweetened somewhat with sugar or honey (or even without sweetening), proved most desirable. Formaldehyde is inexpensive when thus used, and has the added advantage that it is not particularly injurious to man if accidentally taken in weak concentrations, and may, therefore, be used with little fear. It is also one of the most powerful germicides known, and is not injurious to delicate fabrics. Formaldehyde is ordinarily purchased in from 38 to 40 per cent solutions and should be diluted with water to about 2 per cent (add about twenty times as much water). The solution should be placed in shallow vessels on window sills, on the table or in the show window. It is not an easy matter to control the fly in a dining room where there is plenty of liquid material for food and drink, such as water, milk, sweets, etc., but when this can be removed or covered in the evening and the dishes of formaldehyd then put in place, the flies will drink the poison the first thing in the morning and the end will be accomplished much more readily. One is here taking advantage of the fact that the fly seeks something to drink early in the morning. Placing a piece of milk-soaked bread in the dish of formaldehyd adds somewhat to the efficiency.

OTHER PRECAUTIONS.

It is highly important that sick rooms should be well screened, especially in cases of infectious diseases. For the protection of the outside world any flies that chance to find their way inside after the best precaution has been exercised should be killed to prevent their possible escape. Pus rags, bandages, sputum cloths, and the like, should not be carelessly thrown into the open garbage barrel where flies freely congregate. It may seem unnecessary to even mention these simple sanitary measures, but the writer has seen the grossest neglect in this respect, even where better judgment should have prevailed.

ORDINANCES IN FLY CONTROL.

Under city, town, or village conditions the crusade against the fly must also be made a matter of ordinance backed by the intelligent interest of the citizens. One stable owner who does not believe in the "**notion**" that flies originate in horse manure (and there are not a few of that kind) can easily supply flies for several adjacent city blocks, hence there must be some ordinance to compel action.

Ordinances must be practical, making it possible to comply therewith; they must be constitutional and must provide a basis for conviction, *i. e.*, our newer manure ordinances will point out that the presence of fly larvæ or pupæ is sufficient evidence that the provisions of the ordinance have not been complied with.

Stable ordinances should regulate the erection and maintenance of stables while manure ordinances should regulate the disposal of manure. Municipal collection and disposal of manure is highly desirable. There is no reason why a municipality could not require that

all manure be collected at specified times by authorized scavengers and that a small fee be charged stable owners for the removal of the same. The manure may then either be incinerated or properly stored. It is far preferable that a community have one large municipal manure pile and know where it is than to have many smaller heaps in as many different places.

It would seem feasible to even dispose of the composted manure at a profit to the municipality.

Flies are gross food contaminators hence food ordinances must also provide for protection against these and other insects as well. It is, however, manifestly unfair to compel merchants to protect their wares against flies if stable owners who are responsible for the propagation of the flies are not compelled to do their part in the prevention of the same.

CLEAN-UP CAMPAIGNS.

The annual organized and systematically conducted "clean-up campaign" is gaining in favor very rapidly in all parts of the United States. Many communities in California have recently undertaken this program. I would like to see an annual (preferably a semi-annual) clean-up **week** in every village, town, and city in California. No community is too clean to participate in this movement. It is at least a suspicious "sign" when city officials or business men refuse to enter upon this program, fearing that others will think that their city must be terribly dirty to have to undertake a clean-up campaign. As a matter of fact, a city is a large household and should be treated accordingly. No one thinks evil of the good housewife when she gives her home a thorough cleaning and this she does much oftener than once a year. Why should we take a different attitude toward our larger household? I would have every able-bodied man, woman and child devote at least a few hours during the clean-up week to the task of making the face of the city to shine; this devotion must be **physical** as well as **oral**. Then I would "wind up" the campaign with a real jollification, consisting of a civic parade, or other demonstration. That would assist in giving inspiration to keep things clean thereafter.

We clean up for the sake of **health** as well as for appearance. A clean, healthful environment reflects in a wholesome manner upon the inhabitants. A dirty unsanitary environment produces an unfit citizenship. We are very largely creatures of our environment and are subject to it in large measure, but by virtue of our intelligence we have power to change conditions from the unlivable to the livable. Note the Panama Canal zone with its former pestilence, now a healthier place in which to live than New York City.

We are, then, concerned with the things 'round about us, organic and inorganic, particularly objects which are a menace to health. It has been proved beyond question that flies are not only pestiferous and untidy, with habits beyond repair, but also figure largely in the transmission of certain filth diseases when the infectious matter of the same is not properly disposed of, notably human excreta in the case of typhoid, dysentery, cholera, summer complaint of infants, sputum in cases of consumption, etc.

A community that does not include flies and mosquitoes (when the latter are present) in its clean-up program is working on a 50 per cent efficiency basis. Indeed, a community which has freed itself of flies and mosquitoes, their breeding and harboring places, has conducted a most efficient clean-up campaign, i.e., a flyless city is a clean city, and conversely many flies always denote a dirty city.

Three important factors are involved in the process of housefly management, viz: (1) **Information**; an informed public is essential to an efficient health movement of any kind if the results are to be of lasting benefit. (2) **Application**; involving the **actual doing of things**, simplified and made effective through information. (3) **Legislation**; or the creation of ordinances which can be enforced and then enforcing them without fear or favor. Let the ordinance strike at the root of the evil. If horse manure is responsible for the origin of 95 per cent of our flies, and kitchen refuse and other garbage gives us the other 5 per cent, then let us place these nuisances under control.

REPORT OF THE SECRETARY'S TRIP TO WASHINGTON.

There are at present pending in congress two bills of great importance to the public health throughout the United States. One of these bills provides for the establishment of a federal leprosarium, where the few hundred lepers of the United States could be gathered into a colony with provisions for a nearly normal community life and suitable hospital care for the bed-ridden. This bill is of great interest to California, as we receive occasional lepers from the Orient, from Mexico, and from the other states, and the present system of caring for them singly, or in small groups, in the several counties, has proved highly unsatisfactory, and, in many instances, inhuman.

The other bill provides for federal assistance in the care of indigent tuberculous persons who have become public charges in states where they are not legal residents. The bill originated in California where the tuberculosis death-rate is kept very high by the migration of tuberculous from other states. The federal assistance would be given only to institutions coming up to standards set by the Public Health Service. A recent amendment of the bill permits the return of nonresident patients, under favorable conditions, to their home states at government expense.

In December the State Board of Health decided that the measures were of such great importance to the nation and to California that they would send a representative to Washington to explain the merits of these bills to congressmen and others interested. On this mission I reached Washington on January 5, 1916.

At Washington I found that the California congressmen were almost unanimously in favor of both bills. The tuberculosis measure was introduced in the house by Representative William Kent, of California. The bill has since been reintroduced by him with amendments and consequently, its number has been changed from H. R. 8352 to H. R. 11864. Senator George W. Norris, of Nebraska, introduced the measure in the Senate as S. 3202. Both these congressmen are working vigorously to advance the bills.

On Monday, January 17th, there was a hearing before the Senate Committee on Public Health and National Quarantine, on the tuberculosis bill as introduced by Senator Norris (S. 3202). An early hearing had been granted in order that the representative of the California State Board of Health might be heard. Senator Norris, Representative Kent, Dr. George Kober, and I spoke in favor of the bill. The proceedings were subsequently printed.

On February 1st there was a hearing before the Committee on Interstate and Foreign Commerce of the House of Representatives on the Kent tuberculosis bill (H. R. 8352). Congressman Kent, Surgeon General Rupert Blue, of the Public Health Service, Assistant Surgeon General Trask, and I appeared in behalf of the bill. The proceedings have been printed.

During my stay in Washington I had opportunity for discussing federal and state co-operation along a number of lines of public health work in California. Very profitable interviews and conferences were

held with officials of the Public Health Service, at the administrative offices and at the Hygienic Laboratory, of the Bureau of the Census, the Bureau of Animal Industry, the Bureau of Chemistry, and the Bureau of Mines.

When I first arrived in Washington the Pan-American Scientific Congress was still in session and I attended as the official delegate of the State Board of Health.

On my way back to California I spent a day at San Antonio, Texas, where a meeting and luncheon had been arranged by Mr. R. J. Newton, Secretary of the Southwestern Conference on Tuberculosis. The luncheon was well attended by physicians, social workers, and other persons interested in the tuberculosis problem. They testified as to the seriousness of the problem of the migratory consumptive. I was given the opportunity of explaining the tuberculosis measure now before congress. A resolution endorsing the bill was passed.

WILBUR A. SAWYER, Secretary.

THE MARCH MEETING OF THE STATE BOARD OF HEALTH.

The regular monthly meeting of the State Board of Health was held March 4th, in Sacramento. There were present Dr. George E. Ebricht, president; Dr. Edward F. Glasser, Dr. Robert A. Peers, and Dr. Wilbur A. Sawyer. A written report of the Secretary's trip to Washington in connection with public health legislation had been placed in the hands of each member.

In response to a request for an opinion, the Board decided that under proper conditions wooden bunks filled with straw are sanitary. It was thought that frequent changing of the straw offset some of the advantages of more permanent cheap mattresses.

The Secretary was given power to act in the matter of arranging an exhibit of the State Board of Health at the State Fair of 1916 at Sacramento.

It was decided that the State Board of Health would call a conference at an early date between the various administrative officers specially interested in the enforcement of the new milk law, which goes into effect on October 1st. The object of the conference would be to outline the most effective methods of co-operation.

The case of a physician and health officer who had failed to report certain cases of typhoid fever was considered. On his assurances that the omission was accidental, at a time when he was unusually busy, and that there would be no repetition of the offense, the Board decided not to prosecute. Failure to report a communicable disease is a misdemeanor and is punishable by a fine of not less than twenty-five or more than five hundred dollars, or by imprisonment for a term of not more than ninety days, or by both fine and imprisonment. The list of diseases which must be reported is as follows: anthrax, beri-beri, cerebrospinal meningitis (epidemic), chickenpox, cholera (Asiatic), dengue, diphtheria, dysentery, erysipelas, German measles, glanders, gonococcus infection, hookworm, leprosy, malaria, measles, mumps, ophthalmia neonatorum, pellagra, plague, pneumonia, poliomyelitis, rabies, scarlet fever, smallpox, syphilis, tetanus, trachoma, tuberculosis, typhoid fever, typhus fever, whooping-cough, and yellow fever. Gonococcus infection and syphilis are to be reported by office number only, names and addresses of patients not being required.

A petition was received from stockmen of Modoc County asking for a modification of the quarantine against rabies, in accordance with the regulations of the Board, so that dogs could be used during the daylight hours in herding sheep, if under constant supervision. The previous action of the Secretary in granting this petition was confirmed by formal action of the Board. No change was made in the regulation forbidding the moving of dogs into, and out of, the county.

The Board decided to undertake, during the summer of 1916, in co-operation with the University of California, a survey of malaria and mosquitoes in California, under the direction of Professor W. B. Hens, Consulting Parasitologist of the State Board of Health.

The following resolution was passed, placing on public record the attitude of the Board toward full-time service.

Resolved, That the full-time officers of the State Board of Health are not permitted to accept fees for professional services, either for themselves or for their bureaus.

A petition was received from the residents of Broderick, Yolo County, relative to standing waters, dangerous to health, and an investigation by the Bureau of Sanitary Engineering was ordered.

A permit was granted to the city of Compton to discharge sewage effluent into Compton Creek, in accordance with the recommendations of Mr. C. G. Gillespie, Director of the Bureau of Sanitary Engineering. A permit was granted to dispose of the sewage of a privately owned system at Colma through subsurface irrigation.

On the recommendation of Miss Anna C. Jammé, Director of the Bureau of Registration of Nurses, certificates as registered nurses were granted to two candidates, and the following hospitals were accredited for one year: Orange County Hospital, Orange, and the Anaheim Sanitarium, Anaheim. The Board decided to send Miss Jammé as its representative at the annual meeting of the American Nurses' Association in New Orleans, April 27th to May 3d, 1916.

Ninety-eight cases of alleged violations of the foods and drugs laws had been set for hearing at this meeting, and the defendants or their attorneys appeared in person in forty-one cases. Most of the cases were referred to district attorneys for prosecution.

WILBUR A. SAWYER, Secretary.

REPORT OF THE BUREAU OF ADMINISTRATION FOR FEBRUARY, 1916.

W. A. SAWYER, M.D., Director.

SANITARY INSPECTIONS.

By EDWARD T. ROSS, Sanitary Inspector.

The entire month was spent in Modoc and Lassen counties in connection with the campaign which is being waged against rabies.

During the month a number of towns were visited for the purpose of explaining to the citizens the requirements of the quarantine and in soliciting their co-operation in the work. One thousand premises were inspected for loose and unlicensed dogs and 11,614 poisoned baits were placed, resulting in the destruction of a large number of possible carriers of the disease.

The following is a summary of operations for the month:

Towns visited	11
Premises inspected for loose and unlicensed dogs.....	1,074
Dogs found without license.....	323
Dogs found provided with license.....	661
Dog license application blanks issued.....	1,161
Dogs destroyed	260
Cats destroyed (domestic).....	238
Coyotes destroyed by district hunters and others using State and govern- ment poison	349
Coyotes brought in by citizens for bounty.....	414
Bob cats destroyed	45
Rabbits shot for bait.....	897
Poison baits placed by district hunters.....	11,614
Traps placed by district hunters.....	914
Poison issued (ounces).....	257
Poison issued (filled capsules).....	3,555
Empty capsules for poison issued.....	17,075
Notices posted (quarantine).....	78
Notices posted (warning).....	98

The following suspected cases of rabies were reported during the month:

Coyotes	19
Dogs	8
Cattle	55
Horses	8
Calves	10
Sheep	5
Cats (domestic)	1

The following animals' brains were shipped to the Laboratory during the month:

Coyotes	-----	12
Dogs	-----	9
Cattle	-----	22
Horses	-----	2
Calves	-----	6
Sheep	-----	2
Cats (domestic)	-----	1

The following animals were found dead during the month. Cause of death, doubtful:

Cattle	-----	200
Horses	-----	49
Calves	-----	14
Sheep	-----	202
Hogs	-----	15

The following reports received from the Laboratory during the month show the following cases proved positive for rabies:

Coyotes	-----	15
Dogs	-----	5
Cattle	-----	11
Horses	-----	1
Sheep	-----	3

MORBIDITY. REPORTS.

GUY P. JONES, Morbidity Clerk.

There were sixty-three classes of smallpox reported during February. Forty-three of these persons suffering from the disease had never been successfully vaccinated, ten had been last vaccinated more than seven years preceding attack, five had been vaccinated within seven years preceding attack, and vaccination histories were not obtained or were uncertain for the remaining five cases. There were forty-eight cases of typhoid fever. Four cases of epidemic cerebrospinal meningitis were reported. Six cases of poliomyelitis were reported. There were no unusual outbreaks reported. There was the usual number of cases of scarlet fever, measles, diphtheria, etc. A case of leprosy was reported from Alameda County, a case of anthrax from Santa Cruz County and two cases of trichinosis from Merced County. The first case of ophthalmia neonatorum to be reported under the new law was registered from Los Angeles.

REPORT OF THE BUREAU OF COMMUNICABLE DISEASES FOR FEBRUARY, 1916.

JAMES G. CUMMING, M.D., Director.

The Diagnosis of a Suspected Case of Smallpox by Animal Test.

The Bureau was asked to send a representative to Stockton to investigate a suspected case of smallpox which was held in quarantine in that city. It was found that the patient had previously been treated with bromides, and, with the appearance of a slight eruption, the dose of the drug was reduced. As the skin condition did not clear up, the bromide treatment was discontinued. Within a few days the eruption became markedly exacerbated, and took on an irregular pustular character which so resembled smallpox that the Health Officer had the patient quarantined.

On inspection, the case presented a skin condition which could easily be classified as that of a borderline case of smallpox. The lesions were in practically all stages of development, fairly regularly scattered over the body, with the exception of the palms of the hands, soles of the feet, and the hairy surface of the head. A few of the lesions presented an indefinite umbilication. No history of subjective symptoms could be obtained.

Owing to the suspicious symptoms and the advisability of not releasing the patient from quarantine until the case was definitely diagnosed as other than smallpox, the Bureau decided to resort to the laboratory method of diagnosis. About $\frac{1}{2}$ c. c. of pus was drawn from several well-developed lesions in a capillary pipette. In co-operation with Dr. John N. Force, of the University Hygienic Laboratory, this pustular material was tested on rabbits which were sensitized to smallpox virus. Two smallpox immune rabbits and one control rabbit were used in the experiment. The two immune rabbits and the control rabbit were injected intradermally on the right side with the diluted pustular material. These animals were injected intradermally on the left side with commercial smallpox vaccine. After twenty-four hours, there were no reactions in any of the three animals at the site of injection with the suspected smallpox material. On the other hand, the control inoculations of commercial virus produced a well-defined areola with a central yellowish papule in the two immune animals; while in the normal animal no reaction was produced. It will be noted that in this experiment the suspected material was controlled with commercial vaccine, also that the immune animals were controlled with a normal rabbit. Inasmuch as the vaccine virus produced a local anaphylactic reaction in the immune rabbits, while there was an absence of reaction at the site of inoculation with the suspected smallpox material, it was shown that the case was not one of smallpox. The absence of reaction in the control rabbit at the site of injection of both the suspected material and the virus, controls the reactions in the two smallpox immune rabbits.

The value of this laboratory test is made evident by the fact that a suspected borderline case of smallpox was diagnosed beyond question. This practical test made it possible to release the patient from quarantine and thus relieve the community from unnecessary expense.

SMALLPOX IN EL DORADO COUNTY.

The outbreak of smallpox in El Dorado County nearly resulted in the disorganization of the mining industry in several localities. One of the epidemics was investigated and controlled by this Bureau. Here fifty-two exposed individuals readily submitted to vaccination, thus safeguarding the community against further spread of the disease. In another section of that county, the mine owners requested assistance and advice regarding a threatened epidemic of smallpox. They readily agreed that universal vaccination of employees was the proper procedure for the control of the epidemic. The management of this situation was turned over to the County Health Officer, who proceeded with the proper preventive measures.

In these two threatened epidemics it may be noted that the ravages of this disease were prevented by reasonable control measures—vaccination—and, further, that universal vaccination, with its accompanying security against the disease, averted the disorganization of the mining industry, thus preventing its economic loss to both operator and miner.

The Formation of a Mosquito Abatement District.

Advantage is being taken of the law which provides for the formation of malaria mosquito abatement districts. This interest is shown by the fact that a large number of communities throughout the State are considering the organization of such districts; in fact, several of these have already been established. The Bureau has had, from numerous districts, requests for assistance in outlining campaigns against the mosquito menace. The State Board of Health is prepared to co-operate in such matters without charge to the city. Prof. W. B. Herms, Consulting Parasitologist, is spending about half time in the field investigating local conditions, giving public lectures, holding conferences with Boards of Trade and Commercial Clubs, and directing these various campaigns. He finds that there is keen appreciation of this effort to abate the mosquito menace and that clubs and various organizations are heartily co-operating in the work. Such an attitude on the part of the community, together with the efficient management of the campaign, should duplicate here the preventative work which was so successfully carried on against malaria on the Panama Canal. In the case of the Canal Zone, the work was carried on by a paternal government which enforced the necessary scientific measures; in the commonwealth of California, however, science has but to point out the danger and suggest the remedy; the people themselves rise to correct the evil.

Division of Biological Examinations.

Summary of Examinations made in the California State Hygienic Laboratory
During the Month of February, 1916.

Condition suspected	Positive	Negative	Inconclusive	Total
Main laboratory at Berkeley:				
Anthrax -----		6		6
Diphtheria (diagnosis) -----	20	34	7	61
Diphtheria (release) -----	49	45	4	98
Diphtheria (school investigations) ¹ -----	62	74	11	147
Gonococcus infection -----	12	25		37
Hookworm -----	112	152		264
Malaria -----		3		3
Rabies -----	38	35		73
Syphilis (Wassermann test) -----	7	128	1	136
Tuberculosis (sputum examinations) -----	8	19	1	28
Typhoid (Widal test) -----	2	17	1	20
Miscellaneous -----	1	4		5
				878
Northern branch at Sacramento:				
Diphtheria (diagnosis) -----		8	1	9
Diphtheria (release) -----	6	13		19
Malaria -----		6		6
Tuberculosis (sputum examinations) -----	4	13		17
Typhoid (Widal test) -----		6	2	8
				59
San Joaquin Valley branch at Fresno:				
Diphtheria (diagnosis) -----	2	23	2	27
Diphtheria (release) -----	15	21	2	38
Gonococcus infection -----		1		1
Malaria -----	1	1		2
Tuberculosis (sputum examinations) -----	2	6		8
Typhoid (Widal test) -----		3	1	4
Miscellaneous -----		1		1
				81
Southern branch at Los Angeles:				
Diphtheria (diagnosis) -----	16	131	3	150
Diphtheria (release) -----	8	24	1	33
Diphtheria (school investigations) ² -----		200		200
Malaria -----		1		1
Tuberculosis (sputum examinations) -----	7	17		24
Typhoid (Widal test) -----	1	10	2	13
				421
Total number of examinations -----				1,439

¹ Cultures taken from school children at San Anselmo (128), and from students at the University of California Infirmary (19).

² Cultures taken from school children at Downey (133), and Riverside (67).

Division of Preventive Therapeutics.

Pasteur Treatment for the Prevention of Rabies by the State Hygienic Laboratory During the Month of February, 1916.

	Treatment commenced	Treatment completed
Main laboratory at Berkeley-----	2	3
Northern branch at Sacramento-----	0	0
San Joaquin Valley branch at Fresno-----	0	0
Southern branch at Los Angeles-----	3	0
Laboratory of Sacramento Board of Health, by deputized bacteriologist-----	0	0
Laboratory of San Francisco Board of Health, by deputized bacteriologist-----	0	0
Laboratory of Los Angeles Board of Health, by deputized bacteriologist-----	1	0
Laboratory of San Diego City Board of Health, by depu- tized bacteriologist-----	0	0
Laboratory of Letterman General Hospital, Presidio, by deputized bacteriologist-----	0	0
Laboratory of United States Naval Hospital, Mare Island, by deputized bacteriologist-----	0	0
Totals-----	6	3

Vaccine for the Prevention of Typhoid Fever Issued by the State Hygienic Laboratory During the Month of February, 1916.

Number of physicians to whom vaccine was sent-----	9
Number of complete treatments sent-----	66

Public Health Instruction.

Participation in Instruction in Public Health During February, 1916.

Main Laboratory at Berkeley:	
Bacteriological instruction outfits sent out-----	1
Bacteriological instruction outfits in use-----	24
Lectures or talks by the director-----	4

Division of Epidemiological Investigations.

Epidemiological Investigations and Other Special Investigations During February, 1916.

Main Laboratory at Berkeley:	
Special investigations by the director-----	1
An investigation of hookworm disease at Jackson, California.	
Special investigations by the assistant director and bacteriologist-----	2
An investigation of typhoid fever at Antioch.	
An investigation of smallpox at the Montezuma mine, Placerville.	
Special investigations by the assistant director-----	1
An investigation of the water supply of Santa Barbara.	

REPORT OF THE BUREAU OF VITAL STATISTICS.

GEORGE D. LESLIE, Director.

Births, Deaths and Marriages for January.*

State Totals and Annual Rates.—The following table shows for California as a whole, the birth, death and marriage totals for the current and preceding months in comparison with those for the corresponding months of last year, as well as the annual rates per 1,000 population represented by the totals for the current and preceding months. The rates are based on an estimated midyear population of 2,946,347 for California in 1916, the estimate having been made by the Census Bureau method with slight modifications.

Birth, Death and Marriage Totals, with Annual Rates per 1,000 Population, for Current and Preceding Months, for California: January.

Month	Monthly total		Annual rate per 1,000 population 1916
	1916	1915	
January—			
Births -----	4,158	3,973	16.7
Deaths -----	3,942	3,360	14.7
Marriages -----	2,225	2,381	8.9
	1915	1914	1915
December—			
Births -----	4,362	4,233	17.7
Deaths -----	3,993	3,797	16.5
Marriages -----	2,667	2,698	11.0

The birth and death totals for January were considered greater in 1916 than in 1915, while the marriage total for the month was slightly less this year than last.

The birth registration exceeded the death total by 216, or 5.5 per cent, in January.

Length of Residence.—As to deaths, it may be noted that for the 3,942 decedents in January the length of residence in California was as follows: Under 1 year, 156, or 3.9 per cent; 1 to 9 years, 715, or 18.2 per cent; 10 years and over, 1,869 or 47.4 per cent; life, 892, or 22.6 per cent; and unknown, 310, or 7.9 per cent.

County Marriage Totals.—The counties showing the highest marriage totals for the month were as follows: Los Angeles, 498; San Francisco, 470; Alameda, 223; San Diego, 121; Fresno, 89; Sacramento, 83; Orange, 82; San Bernardino, 61; San Joaquin, 50; Santa Clara, 46; Marin, 44, and Kern, 30. The aggregate for San Francisco and other bay counties was 786 against 570 for Los Angeles and Orange counties together.

NOTE.—The present report is for the month preceding, but one. This order must be followed hereafter, because of the publication of the Bulletin during the early part of the month, before the tabulation of records for the preceding month is completed.

County Birth and Death Totals.—Exclusive of stillbirths in both cases, the birth and death totals for the month were as follows for the leading counties, arranged in decreasing order of birth registration:

County	Births	Deaths	County	Births	Deaths
Los Angeles -----	1,029	1,031	San Joaquin -----	80	113
San Francisco -----	702	771	Orange -----	74	41
Alameda -----	380	395	Sonoma -----	72	79
Fresno -----	191	104	Tulare -----	72	32
Sacramento -----	174	114	San Mateo -----	58	37
Santa Clara -----	139	149	Humboldt -----	57	43
San Bernardino -----	113	115	Contra Costa -----	50	30
San Diego -----	105	106	Riverside -----	50	59

City Birth and Death Totals.—Birth and death totals, exclusive of stillbirths, are presented similarly for the principal California cities below:

City	Births	Deaths	City	Births	Deaths
San Francisco -----	702	771	San Jose -----	63	56
Los Angeles -----	671	673	Riverside -----	46	29
Oakland -----	243	226	Long Beach -----	41	42
Sacramento -----	114	95	Eureka -----	39	22
San Diego -----	69	72	Stockton -----	39	82
Pasadena -----	68	52	Alameda -----	38	34
Berkeley -----	65	66	San Bernardino -----	36	46
Fresno -----	63	34	Bakersfield -----	22	25

Geographic Divisions (Infant Mortality).—The following table presents data for geographic divisions to show in comparison with total births and deaths the number of deaths under 1 year as some indication of conditions with reference to infant mortality in different portions of the State.

Total Births and Deaths, with Deaths Under One Year, for Geographic Divisions: January.

Geographic division	Total live births	Total deaths, all ages	Deaths under 1 year
The State -----	4,158	3,942	395
Northern California:			
Coast counties -----	199	232	3
Interior counties -----	225	163	1
Central California:			
San Francisco -----	702	771	4
Alameda County -----	380	395	6
Other bay counties -----	129	90	6
Coast counties -----	251	263	2
Interior counties -----	771	590	5
Southern California:			
Los Angeles city -----	671	673	8
Rest of Los Angeles County -----	358	358	2
Other counties -----	472	407	8

Cause of Death.—The following table shows the classification of deaths in California for the current month, in comparison with the preceding month:

Deaths from Certain Principal Causes, with Proportion per 1,000 Total Deaths, for Current and Preceding Month, for California: January.

Cause of death	Deaths: January	Proportion per 1,000	
		January	Dec., 1915
All causes -----	3,942	1,000.0	1,000.0
Typhoid fever -----	11	2.8	5.5
Malarial fever -----			1.0
Smallpox -----	1	0.3	
Measles -----	4	1.0	0.2
Scarlet fever -----	2	0.5	1.7
Whooping-cough -----	4	1.0	1.5
Diphtheria and croup -----	24	6.1	4.8
Influenza -----	55	14.0	11.3
Other epidemic diseases -----	12	3.0	2.8
Tuberculosis of lungs -----	490	124.3	110.2
Tuberculosis of other organs -----	51	12.9	13.8
Cancer -----	239	60.6	65.9
Other general diseases -----	173	43.9	47.6
Meningitis -----	21	5.3	5.3
Other diseases of nervous system -----	242	61.4	71.6
Diseases of circulatory system -----	867	219.9	205.6
Pneumonia and broncho-pneumonia -----	511	129.6	138.2
Other diseases of respiratory system -----	110	27.9	21.0
Diarrhea and enteritis, under 2 years -----	48	12.2	11.8
Diarrhea and enteritis, 2 years and over -----	41	10.4	12.5
Other diseases of digestive system -----	167	42.4	36.8
Bright's disease and nephritis -----	278	70.5	70.1
Childbirth -----	31	7.9	7.0
Diseases of early infancy -----	113	28.7	37.8
Suicide -----	76	19.3	15.5
Other violence -----	235	59.6	63.4
All other causes -----	136	34.5	37.1

In January there were 867 deaths, or 22.0 per cent of all, from diseases of the circulatory system; 621, or 15.8 per cent, from pneumonia and other diseases of the respiratory systems; and 541, or 13.7 per cent, from various forms of tuberculosis. Heart disease as well as pneumonia, surpassed tuberculosis in the death total for January.

Other notable causes of death in January were: violence, 311; Bright's disease and nephritis, 278; diseases of the nervous system, 263; diseases of digestive system, 256; cancer, 239; and epidemic diseases, 113.

The deaths from epidemic diseases were as follows: Influenza, 55; diphtheria and croup, 24; typhoid fever, 11; whooping-cough and measles, each 4; and all other epidemic diseases, 15.

The deaths from the three leading epidemic diseases reported for the month were distributed by counties as follows:

Influenza		Diphtheria and croup		Typhoid fever	
Alameda	2	Alameda	2	Alameda	1
Amador	1	Colusa	1	Nevada	1
Butte	1	Imperial	1	Orange	1
Fresno	1	Los Angeles	4	Sacramento	2
Los Angeles	21	San Diego	1	San Diego	1
Merced	1	San Francisco	12	San Luis Obispo	1
Nevada	1	Santa Clara	2	Sonoma	1
Orange	2	Tehama	1	Tuolumne	2
Placer	2			Yuba	1
Sacramento	1	Total	24	Total	11
San Benito	1				
San Bernardino	3				
San Diego	4				
San Joaquin	1				
Santa Barbara	1				
Santa Clara	1				
Sierra	3				
Sonoma	1				
Stanislaus	2				
Trinity	2				
Tulare	1				
Yolo	1				
Yuba	1				
Total	55				

Sex, Race and Nativity.—The proportion of the sexes among the 3,942 decedents in January was: Male, 2,326, or 59.0 per cent, and female, 1,616, or 41.0 per cent.

The race distribution of decedents was: White, 3,716, or 94.3 per cent of all; negro, 73; Japanese, 69; Chinese, 64, and Indian, 20.

The 3,716 white decedents were classified by nativity as follows: California, 819, or 22.0 per cent; other states, 1,504, or 40.5 per cent; foreign countries, 1306, or 35.2 per cent, and unknown 87, or 2.3 per cent.

Age Periods.—The 3,942 deaths reported for the month were distributed by age periods as follows: Under 1 year, 305, or 7.7 per cent; 1 to 4 years, 110, or 2.8 per cent; 5 to 9 years, 46, or 1.2 per cent; 10 to 19 years, 104, or 2.6 per cent; 20 to 29 years, 286, or 7.3 per cent; 30 to 39 years, 385, or 9.8 per cent; 40 to 49 years, 410, or 10.4 per cent; 50 to 59 years, 538, or 13.6 per cent; 60 to 69 years, 633, or 16.1 per cent; and 70 years and over, 1,125, or 28.5 per cent.

The 305 deaths under 1 year, in comparison with the 4,158 live births reported for the month, represent an infant mortality ratio of 73 per 1,000 births.

REPORT OF THE BUREAU OF TUBERCULOSIS FOR FEBRUARY, 1916.

By E. L. M. TATE, Director.

When the supervisors of Alameda County, on March 3d, voted unanimously to purchase fifty-two acres of land, separate from any of the existing county institutions, for a tuberculosis sanitarium, they made the most significant step that has been made in California in the tuberculosis movement. When I say that the spot chosen is one of the loveliest in all California, it is without exaggeration; in fact, I have never seen a lovelier location for a sanitarium. Sheltered by hills from fog, with a stream following through the valley, with trees and shrubs and flowers, and a swimming pool, besides a charming old house that will be used as an administration building, the whole place looks as Arcady must have appeared to the poets of a bygone day.

Plans are under way to begin building at once. Provision will be made for 125 beds, and a building with an open air school will be erected for children. The co-operation of Dr. Wills, superintendent of the County Hospital, and the Alameda Society for the Study and Prevention of Tuberculosis, has meant a great deal in divorcing the tuberculous patients from the other institutions. As for the patients in Alameda County who will receive the benefits of the sanitarium, we say just as one of the supervisors said the day it was inspected, "You can't help but get well here." Enthusiastic we all were over the plans—but more about them later. But you good people who doubted the advisability of the subsidy and who wanted instead a small state sanitarium, ought to see what the subsidy is doing here. Sometimes I can scarcely believe my own eyes, and at last the tuberculous patient is beginning to come into his own.

The city of Fresno has voted money for the rent of the Clinic, and the County Medical Society has appointed two clinicians through our efforts. Oregon and Washington are watching us hawk-eyed in a friendly way; they like the plans of the Bureau well enough so that they want our help when their own legislatures meet. We have concentrated our efforts and energies on Oakland and Fresno this month. An externe has been appointed at Fresno who will have complete charge of the tuberculosis ward. The State Tuberculosis Association has placed a nurse at San Bernardino, who is working under our direction. We hope to publish a full report later.

We have for distribution now the tuberculosis "Don't" cards, in all languages. These will be supplied on request, free of charge.

One more word about Alameda County. Just how much of an unconscious influence Oakland's magnificent parks and playgrounds and splendid schools have had in this most important move of caring for its tuberculous, we can not say, but we do know that we take our best Easter hat off, when we get one, to the supervisors of Alameda County; and we want to know which will be the next county to go and do likewise.

REPORT OF THE BUREAU OF SANITARY ENGINEERING FOR FEBRUARY, 1916.

By C. G. GILLESPIE, C.E., Director.

Of particular gratification is the announcement that the town of Antioch has ordered a chlorination apparatus to sterilize the municipal supply derived from the San Joaquin River as advised by the Bureau. The Black Diamond Water Company of Pittsburg has also arranged for a similar installation along with improvements in its filter plant by which lime is now added in addition to aluminum sulphate during low alkalinity in river flood. The result is a sparkling water and with chlorination will be an exceptionally safe one. The improvements will be of inestimable value in contributing to the growth of these towns, which in the past have been seriously handicapped by a water supply as dangerous as any in the State.

To our definite knowledge there are now installed in this State chlorination plants for water disinfection in the following cities: San Diego, Los Angeles, Pasadena, San Jose, Oakland, Berkeley, Sacramento and Eureka. Chlorination plants cost all the way from \$450 to \$1,200, depending on amount and kind of water to be treated and type of regulation desired. At a dose of one to three pounds of liquid chlorine per million gallons of water, costing at the present war price twenty cents per pound, a water as free of pathogenic organism as is possible is obtained. There is absolutely no detectable taste or odor produced by its use, probably the best proof of this being the experience of Pasadena where the installation was not announced until a month after it had been in operation to determine whether the public could notice any real difference in the palatability of the water. Surely so small a cost is cheap insurance, and there are many towns in California which are in duty bound to take out insurance on their water supplies, in particular those derived from surface sources.

Sewage Disposal.

APPLICATIONS FOR PERMITS FILED.

San Luis Obispo. To have investigation made.

Compton. To discharge contact bed effluent into Compton Creek.

J. H. Dennis, Colma. To discharge Imhoff tank effluent into subtile along ravine at Ninetieth street.

PERMITS GRANTED.

El Centro and Imperial (jointly). To dispose of Imhoff tank effluent into New River.

Eagle Rock, Los Angeles, Strickland Home for Boys. To continue present scheme of sewage disposal by subsurface methods.

Riverside. To dispose of settled effluent on new sewer farm on Santa Ana River in such a way as to exclude sewage from the river.

PLANS FILED.

Reedley. Sprinkling filter, dosing tank and final settling tank installation.

Investigations or Inspections.

Cloverdale. Sewage is disposed of by irrigation of privately owned land bordering river, apparently satisfactory so far as avoidance of nuisance is concerned. Probably no sewage reaches the stream in summer but flood water in winter covers the irrigated land with resultant pollution of the river.

Colma. Private individuals propose to install a limited sewerage system with treatment works consisting of an Imhoff tank and a subservice irrigation system, to be situated in a ravine at the edge of the village. There is no general sewer system serving this community, such a project having been defeated at an election the past year.

Healdsburg. The sewage is first passed through a septic tank and then discharged into a tributary of the Russian River. This tributary is dry in summer and consequently no serious pollution of the main stream occurs at that time. During wet season sewage reaches the river in a short time.

Mill Valley. The outfall sewer here is too small, and serious nuisances and unsanitary conditions have arisen in wet weather by overflowing of sewage through manholes and breaks in the pipes on street surfaces and lawns. The city proposes to begin, the coming summer, to lay a larger outfall sewer, which should overcome the difficulty.

Santa Barbara. Sewage disposal into ocean causes serious beach nuisance which the city is anxious to correct. Fine screening and modifications of the interceptors and outfall appear as the best solution.

Santa Rosa. A sewer farm, including a number of septic tanks and about 130 acres of land, is operated by the city, but not to the best advantage, as indicated by the fact that a portion of the sewage is permitted to flow into Santa Rosa Creek. The tanks are poorly designed and operated and certain improvements will have to be instituted before entirely satisfactory results can be obtained.

Sonoma. Complaints relative to sewage disposal at Sonoma were investigated and certain suggestions for improvements made. The city operates a small farm on which the sewage is used for irrigation after preliminary treatment in a septic tank. If operation can not be improved the outfall sewer may have to be extended to tidewater at a distance of two or three miles.

Sonoma State Home for Feeble-minded. A new septic tank was recently completed, together with facilities for treating the effluent with calcium hypochlorite. Operation is now in an experimental stage.

Utiah. The sewage is passed through a septic tank which clarifies very inefficiently and is then conveyed in an open ditch to the river. The sewage thus pollutes the river at all times of year and certain changes are required which will eliminate this pollution, at least during the summer months.

Water Supplies.

APPLICATIONS FOR PERMITS FILED.

San Luis Obispo. To continue use of present supply.

Santa Barbara. For investigation of present and proposed supplies.

PERMITS GRANTED.

Sweetwater Water Company, San Diego. Temporary permit to continue to use present supply pending gathering of additional data demonstrating effectiveness of natural methods in purification as maintained.

PLANS SUBMITTED—NONE.

Investigations or Inspections.

San Luis Obispo. The regular supplies from the small high ravines, absolutely inaccessible, are concluded to be reliable in quality. Certain lower level sources are not so safe and chlorination is advised, so located as to be usable on any or all the water of the city. Undertaking a study of quality and quantity of all contemplated supplies, use of which will be compelled within the near future, is advised.

Santa Barbara. The De La Guerra wells, a standby supply, are dangerous and need chlorination. The tunnel supplies and the proposed Santa Ynez River supply are now apparently safe. Likelihood of intimate human contact in the future, however, commends that chlorination be provided for these supplies also. It is a delusion to put great reliance on any surface or other supply to which there is a possibility of human contact.

Sonoma. Supply obtained from a large spring at the edge of town. Inspection indicates satisfactory operation.

Ukiah. Supply derived from Fisher Creek, a small mountain stream, and from wells dug in gravel deposits bordering Russian River. Certain improvements are needed and have been recommended.

Cloverdale. Supply obtained from two wells dug in the gravel deposits bordering the Russian River. Certain features should be improved and recommendations by this Bureau have been made accordingly.

Healdsburg. Hypochlorite treatment of water is still practiced. Installation of liquid chlorine treatment recommended by this Bureau several weeks ago is being considered.

Special Investigations.

General sanitary conditions at Sausalito investigated at request of local health department.

Russian River pollution investigated, including general inquiry relative to various sources of pollution and the collection of a series of samples for analysis. Pollution of this river is deemed to be a particularly important matter in view of the extensive transient population along its banks in summer at resorts and camps.

Laboratory Work.

Bacteriological examinations of water—174, of which 93, or 53 per cent, showed contamination.

Bacteriological examination of sewage—1.

Chemical examinations of water—174 (partial).

Chemical examinations of sewage—3 (partial).

REPORT OF THE BUREAU OF FOODS AND DRUGS FOR
FEBRUARY, 1916.

E. J. LEA, Director.

During the month of February three hundred and sixty-nine samples were received at the food and drug laboratory. These samples were classified as follows:

<i>Official.</i>	
Foods -----	160
Drugs -----	24
<i>Unofficial.</i>	
Foods -----	68
Drugs -----	1
Miscellaneous -----	14
<i>Cold Storage.</i>	
Foods -----	102

Official Samples.

The official samples this month consisted largely of tomato pulp, tomato catsup and frozen eggs. Beverages, condiments, liquors, alimentary pastes, sausage, spices and canned vegetables were also included.

Tomato Pulp. Seventy tomato pulp samples were collected from one establishment. These samples represented several hundred barrels of pulp, and it was, therefore, necessary to examine a large number of them. About twelve barrels out of the seventy sampled showed excessive fermentation when opened. Practically all of these pulp samples contained excessive bacteria, and some of them contained excessive mold.

Tomato Catsups. Similar comments apply to the catsups as are stated above regarding tomato pulp.

Frozen Eggs. The frozen egg samples examined are very similar to those reported in last month's bulletin. Some of these eggs might pass for certain purposes; however, very few people would care to eat them in pastry, or other materials, if they could see or smell them. Many of these eggs have been in cold storage nearly one year, which, of course, weakens the egg materially. The eggs are then broken into tin cans and frozen. In breaking these eggs it is not always possible to detect certain objectionable odors under the prevailing temperature conditions, and, consequently, many eggs of a questionable character are mixed with the eggs that are supposed to be good. The eggs examined in the laboratory vary in the character of decomposition; some have a distinctly putrid odor; some are sour; some give off moldy odors; while other eggs have a peculiar, disagreeable odor which is difficult to describe. A few of the frozen egg samples examined this month simply had a stale odor, and in one or two instances, very little odor was apparent. The bacteria counts, however, have been very high, except in a few samples and the chemical analyses indicate that material decomposition has taken place.

Spices. The samples of spices examined indicate that some adulteration is being practiced in this line. In several instances cereals are being used and a number of the spices were prepared from inferior material.

Drugs.

The drug samples consisted largely of aspirin, camphorated oil and veronal. The analyses of aspirin and veronal indicate that these materials are still sold in the adulterated form.

Unofficial Samples.

The unofficial samples were largely received from state institutions and include butter, cereals, cheese, coffee, cornstarch, cream, eggs, flour, fruit, jelly, lard, milk, molasses, nut meats, oils, oysters, pastes, sausage, spice, syrup, tea, vinegar, ammonia, coal oil, leather, shoe blacking, soap and tartar substitute.

Materials that have been below specifications are molasses, spices, syrup, vinegar, coal oil, ammonia, soap and shoe blacking. Deliveries of these materials, which were not up to standard, were rejected at the dealers' expense.

Bakers' Jelly.

A bucket of so-called "bakers' jelly" was received this month, labeled as follows:

The contents of this package are composed of Glucose and Apple Juice.	Net Weight 25 lbs.	Artificially
Alum and Dilute Sulphuric Acid	B A K E R S	Colored
	Jelly	and
	Currant Flavor	Flavored

This sample contained about 60 per cent of glucose; .35 per cent of fruit acid as sulphuric; small amount of apple stock; coal tar color—Ponceau 3 R, and a poor imitation currant flavor.

This product is both adulterated and mislabeled. Sulphuric acid has no place in foods of this character, and alum, unless in very minute quantities, might be injurious. Bakers are warned against using this class of material.

"Jelly," according to the standard, "is the sound, semi-solid, gelatinous product made by boiling clean, sound, properly matured and prepared fresh fruit with water, concentrating the expressed and strained juice, to which sugar (sucrose) is added, and conforms in name to the fruit used in its preparation."

Cake and jelly roll made with jelly conforming to the above standard may properly be made and sold as jelly cake, or jelly roll. If, on the other hand, these products are made with sub-standard or imitation jelly, the product should be labeled or sold as "imitation jelly" cake, or "imitation jelly" roll.

Eggs Used by Bakers.

The investigations of this department have shown conclusively that many bakers use eggs that are badly decomposed and putrid. Such eggs are found in the form of frozen egg meats, and also as eggs in the shell.

Some bakers, of course, reject eggs which are not good, but on the other hand many bakers use almost any egg, except a peculiar variety known as "mouldy hay eggs." Such eggs have an odor that can not be eliminated in baking or disguised by spices, flavoring, etc. The mere fact that many dealers go to the trouble and expense of breaking, canning and paying storage on such eggs is sufficient proof that they have a ready market and a large consumption. Eggs of this class are not used to any extent for technical purposes in California.

Bakers who have decomposed eggs in their possession are liable under the Pure Food law, unless they have a guaranty which clearly covers the eggs in question.

Cold Storage Samples.

Of the one hundred and two cold storage samples examined this month ninety-one were frozen eggs. These samples represented over 150,000 pounds of eggs belonging to about a dozen dealers. With the exception of one or two lots, the eggs were in a very bad condition and the best of the lots contained some eggs that were badly decomposed.

Articles in Cold Storage Condemned upon Physical and Chemical Examination as Unfit for Food.

Material	Amount	Locality	Condition	Disposition
Chickens, turkeys -	400 lbs. -	San Francisco	Decomposed --	Denatured
Eggs—				
Frozen -----	5,580 lbs. -	Los Angeles---	Decomposed --	Incinerated
Frozen -----	5,996 lbs. -	San Francisco	Decomposed --	Incinerated
Shell -----	420 doz.	San Francisco	Decomposed --	Incinerated
Storage -----	40 doz.	Oakland -----	Decomposed --	Destroyed

The Director of the Laboratory, on February 4th, addressed the Tuesday Club of Sacramento, on the subject "Food Inspection." The address was illustrated with samples of a number of food materials which are frequently found in a bad condition.

Upon invitation from the Chamber of Commerce of San Jose, the Director of the Laboratory addressed that body at a luncheon on February 29th, the subject being "Present Problems of Food and Drug Inspection."

Articles of Food Condemned upon Physical and Chemical Examination as Unfit for Food, February, 1916.

Material	Amount	Condition	Locality	Disposition
Cassup -----	20 gals. -----	Decomposed -----	San Francisco	Destroyed.
Cassup -----	10 gals. -----	Decomposed -----	San Francisco	Destroyed.
Mustard spice.	42 pkgs. ----	Decomposed -----	San Francisco	Incinerated.
Egg noodles ---	27 pkgs. ----	Infested with worms.	San Francisco	Incinerated.
Relish -----	3 bottles ---	Decomposed -----	San Francisco	Incinerated.
Spanish olives	94 bottles ---	Decomposed -----	San Francisco	Incinerated.
Vermicelli ----	70 pkgs. ----	Infested with worms.	San Francisco	Incinerated.
Vermicelli ----	40 lbs. bulk	Infested with worms.	San Francisco	Incinerated.
Egg noodles ---	20 lbs. -----	Infested with worms.	San Francisco	Incinerated.
Shells (paste).	38 pkgs. ----	Infested with worms.	San Francisco	Incinerated.
Quaker puffed wheat -----	5 pkgs. ----	Infested with worms.	San Francisco	Incinerated.
Cake mixture .	4 pkgs. ----	Infested with worms.	San Francisco	Incinerated.
Pickled tripe ..	100 lbs. -----	Decomposed -----	San Francisco	Incinerated.
Small cakes ---	2 pkgs. ----	Infested with worms.	San Francisco	Incinerated.
Vermicelli ----	267 lbs. -----	Infested with worms.	San Francisco	Coal oiled.
Chickens -----	6 -----	Decomposed -----	San Francisco	Coal oiled.
Cranberries ---	1 bbl. -----	Decomposed -----	San Francisco	Coal oiled.
Almonds -----	25 lbs. -----	Rancid -----	Oakland -----	Destroyed.
Walnuts -----	5 lbs. -----	Rancid -----	Oakland -----	Destroyed.

Cases Referred to District Attorneys, February 5, 1916.

Name of article	Offense	Accused dealer	Locality
Acid acetylo-salicylic -----	Adulterated and mislabeled.	Sanguinetti Pharmacy -----	San Francisco.
Aspirin tablets -----	Adulterated and mislabeled.	Sanguinetti Pharmacy -----	San Francisco.
Aspirin tablets -----	Adulterated and mislabeled.	No Percentage Drug Co. -----	San Francisco.
Aspirin tablets -----	Adulterated and mislabeled.	No Percentage Drug Co. -----	San Francisco.
Aspirin tablets -----	Adulterated and mislabeled.	La Stella Prescription Pharmacy, Y. Littroff.	San Francisco.
Aspirin tablets -----	Adulterated and mislabeled.	Alta Drug Co., J. W. Elstun, Prop.	San Francisco.
Aspirin capsules -----	Adulterated and mislabeled.	Alta Drug Co., J. W. Elstun, Prop.	San Francisco.
Camphorated oil -----	Adulterated and mislabeled.	Mission Drug Co., W. P. Ryken, Prop.	Ocean View.
Capers -----	Adulterated and mislabeled. Consists of de-composed and filthy vegetable matter.	John H. Tietjen & Co. -----	San Francisco.
Catsup -----	Adulterated and mislabeled. Consists of de-composed and filthy vegetable matter.	John H. Tietjen & Co. -----	San Francisco.
Catsup -----	Adulterated and mislabeled. Consists of de-composed and filthy vegetable matter.	O K Restaurant, C. Martin, Prop.	San Francisco.
Catsup -----	Adulterated and mislabeled. Consists of de-composed and filthy vegetable matter.	W. Weidler -----	San Francisco.
Catsup -----	Adulterated and mislabeled. Consists of de-composed and filthy vegetable matter.	Auditorium Oyster and Chop House.	Oakland.
Catsup -----	Adulterated and mislabeled. Consists of de-composed and filthy vegetable matter.	Reed Pickle Works -----	San Francisco.
Catsup -----	Adulterated and mislabeled. Consists of de-composed and filthy vegetable matter.	Lincoln Bar, L. Foge and H. Sethmann.	San Francisco.
Catsup -----	Adulterated and mislabeled. Consists of de-composed and filthy vegetable matter.	California Oyster Parlor and Restaurant.	San Francisco.
Catsup -----	Adulterated and mislabeled. Consists of de-composed and filthy vegetable matter.	I. Sugiyama -----	San Francisco.
Catsup -----	Adulterated and mislabeled. Consists of de-composed and filthy vegetable matter.	New Home Restaurant, Wong Chong, Pres.	San Francisco.
Chocolate -----	Adulterated and mislabeled. Other material substituted for chocolate.	E. C. Ambrose Co., Inc. -----	Oakland.
Chopped meat -----	Adulterated. Contains sulphur dioxide -----	Eureka Market, Lazzareschi & Co., Props.	San Francisco.

Condiments*	Adulterated and mislabeled. Consists of decomposed and filthy vegetable matter.	J. Gollober	San Leandro.
Eggs	Adulterated and mislabeled. Decomposed and putrid.	D. Helfer	Los Angeles.
Eggs	Adulterated and mislabeled. Decomposed and putrid.	Sam Seelig	Los Angeles.
Figs	Adulterated and mislabeled. Decomposed and wormy.	W. Weidler	San Francisco.
Gin	Adulterated and mislabeled. Substitution of other material.	New Gas Kitchen, Pozzi & Fromhold, Props.	Oakland.
Hair and scalp tonic	Adulterated and mislabeled. False and misleading statements.	Georgia George	San Francisco.
Peppers in brine	Adulterated and mislabeled. Decomposed	Fisher Pickling Co.	San Francisco.
Pork sausage	Adulterated. Contains sulphur dioxide	Independent Meat Market, Joseph Tosey.	San Mateo.
Raisins	Adulterated and mislabeled. Decomposed and wormy.	W. Weidler	San Francisco.
Sausage	Adulterated and mislabeled. Contained cereal not declared.	Gee Sang & Co.	Oakland.
Sausage	Adulterated and mislabeled. Contained cereal not declared.	Sang Sang & Co.	Oakland.
Seeded raisins	Adulterated and mislabeled. Decomposed and wormy.	W. Weidler	San Francisco.
Seeded raisins	Adulterated and mislabeled. Decomposed and wormy.	W. Weidler	San Francisco.
Sweet spirits of nitre	Adulterated and mislabeled. Substitution of other material.	University Pharmacy, F. J. Steinmetz, Prop.	Palo Alto.
Vinegar	Adulterated and mislabeled. Substitution of other material.	E. B. Eddy	Los Angeles.

*Referred on nineteen different counts.

Convictions under Pure Food and Drugs Acts Reported During February.

Name of article	Offense	Accused dealer	Locality	Penalty
Aromatic spirits ammonia	Adulterated and mislabeled	Ryan's Drug Store	Redwood City	Fined \$25.00.
Aromatic spirits ammonia	Adulterated and mislabeled	H. A. Cavassa	South San Francisco	Fined \$25.00.
Camphorated oil	Adulterated and mislabeled	Young Drug Co.	Redwood City	Fined \$25.00.
Chocolat	Adulterated and mislabeled	A. Sutherland	Oakland	Fined \$5.00.
Chopped meat	Adulterated	Joseph Tosey	San Mateo	Fined \$25.00.
Chopped meat	Adulterated	Thomas Tuite	Redwood City	Fined \$10.00.
Eggs	Adulterated and mislabeled	A. Artz	Los Angeles	Fined \$10.00.
Eggs	Adulterated and mislabeled	Broguere & Blanchard	Los Angeles	Fined \$10.00.
Eggs	Adulterated and mislabeled	J. & S. Cartagas	Los Angeles	Fined \$20.00.
Eggs	Adulterated and mislabeled	H. G. Chaffee Co.	Los Angeles	Fined \$25.00.
Eggs	Adulterated and mislabeled	R. F. Coady	Los Angeles	10 days in jail.
Eggs	Adulterated and mislabeled	J. J. Connelly	San Pedro	Fined \$5.00.
Eggs	Adulterated and mislabeled	A. S. Firsich	Los Angeles	Fined \$10.00.
Eggs	Adulterated and mislabeled	Joe Flesia	Los Angeles	Fined \$5.00.
Eggs	Adulterated and mislabeled	S. Ginsburg	Los Angeles	5 days in jail.
Eggs	Adulterated and mislabeled	H. A. Grosse	Los Angeles	Fined \$5.00.
Eggs	Adulterated and mislabeled	W. A. Harsbarger	Los Angeles	Fined \$25.00.
Eggs	Adulterated and mislabeled	P. & G. Hasapis	Los Angeles	Fined \$15.00.
Eggs	Adulterated and mislabeled	S. Herzberg	Los Angeles	Fined \$10.00.
Eggs	Adulterated and mislabeled	K. Horinchi	Los Angeles	Fined \$20.00.
Eggs	Adulterated and mislabeled	A. L. Hoyst	Los Angeles	Fined \$25.00.
Eggs	Adulterated and mislabeled	A. M. Jones	Los Angeles	Fined \$5.00.
Eggs	Adulterated and mislabeled	Mrs. M. Kanowsky	Los Angeles	Fined \$5.00.
Eggs	Adulterated and mislabeled	Lark Produce Co.	Los Angeles	Fined \$20.00.
Eggs	Adulterated and mislabeled	A. Levin	Los Angeles	Fined \$20.00.
Eggs	Adulterated and mislabeled	Loeb, Fleishman (guarantors)	Los Angeles	Fined \$50.00.
Eggs	Adulterated and mislabeled	H. F. Ludwig	Los Angeles	Fined \$10.00.
Eggs	Adulterated and mislabeled	E. Minura	Los Angeles	Fined \$20.00.
Eggs	Adulterated and mislabeled	Palace Market	Los Angeles	Fined \$20.00.
Eggs	Adulterated and mislabeled	E. M. Peters	Los Angeles	Fined \$10.00.
Eggs	Adulterated and mislabeled	Jas. Puryear	Los Angeles	Fined \$25.00.
Eggs	Adulterated and mislabeled	Jos. Reibaldi	Los Angeles	Fined \$10.00.
Eggs	Adulterated and mislabeled	J. Ruedy	Oakland	Fined \$5.00.
Eggs	Adulterated and mislabeled	A. Rustige	Los Angeles	Fined \$15.00.
Eggs	Adulterated and mislabeled	Sam Seelig	Los Angeles	Fined \$10.00.
Eggs	Adulterated and mislabeled	Wreden Packing Co.	Los Angeles	Fined \$10.00.
Eggs	Adulterated and mislabeled	C. E. & F. G. West	Los Angeles	Fined \$15.00.
Eggs	Adulterated and mislabeled	H. Wirz	Los Angeles	Fined \$10.00.
Eggs	Adulterated and mislabeled	C. M. Young	Los Angeles	Fined \$15.00.
Eggs, frozen	Adulterated and mislabeled	B. Horwitz	Los Angeles	150 days in jail.
Eggs, frozen	Adulterated and mislabeled	A. Perl	Los Angeles	Fined \$10.00.
Saltpetre	Adulterated and mislabeled	A. J. Osgood	Los Angeles	Fined \$5.00.

Artificially Colored Olives.

The claim has been made by certain olive growers that a large percentage of olives sold in California as ripe olives are in reality not ripe olives. The statement has been made that certain growers strip their trees in November and December, taking the ripe, medium ripe and green fruit. The olives are then processed in such a way that they are all colored uniformly dark.

The natural color of even the ripest and best olives is not a uniform dark color. The blossom end of the ripe fruit is always darker than the stem end, and the perfectly ripe olive may have a fairly light color. It appears that the black uniform olives have the best sale, even though the olives be very poor in texture and quality. This is a case where the average consumer buys on appearance, regardless of the actual merits of the fruit. The same may be said of immature oranges, which have been "sweated" in order to develop the yellow color. Maraschino cherries go through a process of bleaching, hardening and dyeing with coal tar dyes in order to make a uniform color. These cherries are accepted by the public, whereas a natural cherry without the artificial treatment has very little sale. A highly polished rice has been regarded by the average housewife as a superior article, but as a matter of fact a highly polished rice may be injurious, owing to materials used for coating and polishing. The plain, dull appearing rice should always be chosen. So-called hamburger steak, which is often found on attractive platters and which will keep for days without turning dark, is usually the poorest quality of meat that is sold to the public. This red effect is produced by a chemical known as sodium sulphite. Many other examples might be mentioned but the above are sufficient to illustrate the principle involved. These points should be brought to the attention of the public in order that they may be able to discriminate between natural, wholesome, nutritious foods and other foods which have a fine appearance but which may be decidedly inferior in quality.

Green olives which by processing have been made to appear ripe, and which are labeled or sold as ripe olives, will be regarded by this department as mislabeled under the Pure Food Act.

FOOD INSPECTION DECISIONS.

The department has received the following service and regulatory announcements from the United States Department of Agriculture. We are printing the full text of those which are of essential value to manufacturers and dealers in California and are giving the titles and numbers of all received. Any one interested in these announcements may receive same by addressing the Bureau of Chemistry, United States Department of Agriculture, Washington, D. C.

15. Request for Modification of Food Inspection Decision 82 Denied.

At a hearing held on June 4, 1915, a modification or revocation of Food Inspection Decision 82, on the labeling of coffee produced in the Dutch East Indies, was requested. Representations made at this hearing and others communicated to the bureau by correspondence have been considered. The request is denied.

153. Confectionery Known as "Count" Goods.**154. Use of Term "Ounces" in Place of "Fluid Ounces."**

The Bureau of Chemistry will not recommend the detention of importations or prosecution for shipment in interstate commerce of liquid foods which are imported, or shipped in interstate commerce, prior to July 1, 1916, solely on account of the fact that the expression "ounces," or its equivalent, is not accompanied by the expression "fluid."

155. Declaration of the Quantity of Contents of Berries in Small Open Containers. (Supplementing Item 110 in S. R. A., Chem. 13, p. 3.)

Pending a determination of the question whether the net weight amendment applies to berries in small open containers (such as those which usually hold 1 quart or 1 pint each, and which are commonly placed, without covers, in crates, each crate holding a number of the small containers) and unless public notice of not less than two months be given, the department will not recommend any proceedings under the Federal Food and Drugs Act solely upon the ground that berries in such small containers, shipped in interstate commerce or otherwise brought within the jurisdiction of the Food and Drugs Act, bear no statement of the quantity of the contents upon each such container.

The department is of the opinion that berries, peaches, or tomatoes in small open containers which are packed in crates and arranged within the crates in layers or tiers, constitute food in package form within the meaning of the net weight amendment, and that consequently the law requires that the crates shall be marked with a statement of the quantity of the contents. Each such statement should include the number of small containers and the quantity of the contents of each.

156. Walnuts in Sacks and Cases in Package Form.

In view of the fact that doubts have existed as to whether or not walnuts, packed in sacks and cases in which they are customarily offered for importation into the United States or are shipped in interstate commerce, are in package form within the meaning of the net weight amendment to the Federal Food and Drugs Act, importers and other persons are notified that on and after May 1, 1916, walnuts in such sacks and cases which are not marked plainly and conspicuously with the quantity of the contents will be deemed to be misbranded. Foreign shippers should be advised accordingly.

157. Criticism of Labels of Articles Involved in Court Proceedings.**158. Labeling of Ginger Brandy, Ginger and Brandy, and Ginger with Brandy.**

The Bureau of Chemistry is of the opinion that the use of the terms "ginger brandy," "ginger and brandy," and "ginger with brandy" should be confined to products composed solely of the extractives of ginger dissolved in brandy, and that products sold under the foregoing captions, which contain capsicum, or alcohol from sources other than brandy, are adulterated and misbranded within the meaning of the Food and Drugs Act.

159. Labeling of Flavoring Extracts and of Flavors.

The Federal Food and Drugs Act does not require a statement of the proportion of alcohol on the labels of flavoring extracts used exclusively for food purposes. Extracts which are sold or used for any medicinal purpose should have the proportion of alcohol plainly stated upon the label. The laws of certain states, however, require a statement of the proportion of alcohol on the labels of all flavoring extracts.

Products made in imitation of flavoring extracts and flavors should be labeled so as to indicate plainly that they are imitations; and the word "imitation" should be plainly stated on the label or package as a part of the name of the article.

Flavors in which vehicles other than alcohol are used should be labeled so as to indicate that fact and should conform in strength to the standards for flavoring extracts in Circular 19, Office of the Secretary. Flavoring extracts and flavors which contain smaller proportions of the essential flavoring ingredients than standard

extracts should be labeled as dilute flavoring extracts of flavors and also should be labeled so as to show clearly the extent of deviation from standard strength; for example, a lemon extract or flavor containing but $2\frac{1}{2}$ per cent of lemon oil should be labeled plainly and conspicuously as a dilute lemon extract or flavor and as being one-half standard strength.

160. Labeling of Scotch Whisky.

The expression "Scotch whisky," in the opinion of the Bureau of Chemistry, is applicable only to whisky manufactured in Scotland. Substances labeled or sold as "Scotch whisky" which are not manufactured in Scotland are deemed to be misbranded within the meaning of the Food and Drugs Act.

161. Articles, Sold Under Names Recognized in Index of U. S. Pharmacopœia, Regarded as Drugs.

In the opinion of the Bureau of Chemistry, an article sold under a name recognized in the index, but not appearing in the text, of the United States Pharmacopœia is a drug within the meaning of section 6 of the Federal Food and Drugs Act. Such an article is adulterated under the provisions of the act if it differs from the standard of strength, quality, or purity as determined by tests laid down in the United States Pharmacopœia officially at the time of investigation, unless its own standard of strength, quality or purity is plainly stated upon the bottle or box or other container.

162. Tentative Standards for Sabadilla Seed, Savory Leaves, Fenugreek Seed, Celery Seed and Manna.

163. Treasury Decision 35719, Concerning Cannabis Sativa Linné.

164. Immature Oranges and Grapefruit.

The Department of Agriculture has been requested by growers and shippers to define its position with respect to the application of the Federal Food and Drugs Act to the transportation in interstate commerce of immature oranges and immature grapefruit. These requests have been accompanied by requests for modification of the tests announced by the department for determining whether oranges and grapefruit are immature.

On April 6, 1911, Food Inspection Decision 133, concerning the coloring of green citrus fruits, was issued. Following the issue of Food Inspection Decision 133, seizures were recommended of immature oranges which had been artificially colored by sweating, either prior to shipment or in transit. These seizures led to numerous requests that the department announce tests for determining the immaturity of oranges.

In Service and Regulatory Announcements, Chemistry 11, information 28, page 752, it was stated that the bureau considers California oranges to be immature if the juice does not contain soluble solids equal to, or in excess of, 8 parts to every part of acid contained in the juice, the acidity of the juice to be calculated as citric acid, without water of crystallization. The value of the test laid down in the service announcements has been confirmed by investigations carried on during the season of 1915. In Service and Regulatory Announcements, Chemistry 15, item 144, page 22, the same test was announced for Florida oranges, and a test for grapefruit was announced of 7 parts soluble solids to 1 part of citric acid.

The department, with the information available as the result of its investigations, regards the tests for determining the immaturity of oranges and of grapefruit as being fair, accurate, and reasonable.

Oranges and grapefruit, in common with other articles of food, in the opinion of the department, are adulterated "if they are mixed, coated, colored, powdered, or stained in a manner whereby damage or inferiority is concealed." The only announcement of the department affecting the shipment of immature citrus fruits with which growers and shippers are at present concerned is that given in Food Inspection

Decision 133. In that decision the view was stated that green, immature oranges which have been artificially colored by holding in a warm, moist atmosphere for a short period of time after removal from the tree are colored in a manner whereby inferiority is concealed and are therefore adulterated. In the opinion of the department grapefruit which has been similarly treated also is adulterated. The Federal Food and Drugs Act prohibits the shipment in interstate commerce of such oranges and grapefruit.

The department, therefore, gives warning that the transportation and sale in interstate commerce of immature oranges or grapefruit which have been artificially colored (by sweating or otherwise) so as to conceal damage or inferiority, will be regarded as in violation of the Federal Food and Drugs Act and proceedings under that act will be recommended in all cases where sufficient evidence is obtained to justify such action.

165. Dried Beans.

166. Oats Bleached with Sulphur Dioxid and Oats Containing Added Barley.
(Supplementing Item 150 in S. R. A., Chem. 13, p. 24.)

REPORT OF THE BUREAU OF REGISTRATION OF NURSES FOR FEBRUARY, 1916.

By ANNA C. JAMMÉ, R.N., Director.

The fourth examination of graduate nurses for the certificate as registered nurse was held on February 8th and 9th, simultaneously in Sacramento, San Francisco and Los Angeles. This was the first examination held in this way and is very obviously a great convenience to the candidates who, in many instances, were obliged to encounter an expensive journey, hotel expenses and loss of time, when the examinations were held only in one place. One hundred and twenty-five graduate nurses presented themselves for this examination.

By the combination with the State Civil Service and Los Angeles County Civil Service Commissions applicants who pass the written portion of the examination may automatically be placed on the civil service list after passing an oral examination to determine personal fitness. This is found of advantage, not only to these services, but likewise to nurses. This will also strengthen the teaching in the schools along the lines of public health work and social service.

When a better understanding, concerning nursing in state institutions and in other public health services, is established, opportunities for experience and instruction in our training schools now lying dormant, will be developed and made of value to the State.

The two factors that have contributed a marked influence in recent years in the training of nurses are: the development of modern preventive medicine and modern social work. These have opened many and highly important fields of work and have called nurses in large numbers from private into public service.

It may be truthfully said that there is hardly any public health, or social problem, that may not require co-operation of nurses in working out a solution. This naturally and inevitably throws the obligation of preparing the worker upon the training school as this is the only way in which the fundamental ground work and training for such work can be secured.

This has created an impetus among young women who are contemplating taking up public health work and rendering useful public service. The question is asked "Where can I get this experience and training?" So far there has been no answer, except to go to the far eastern centers, such as Chicago, New York, Philadelphia or Boston.

Provision must be made in California where special courses following the fundamental training in the schools for nurses can be taken. We owe this to the students and future workers and to our public health service. The establishment of nurses in our public schools, in the work for protection of infant life, in the prevention and spread of tuberculosis, in rural nursing, in the teaching of hygiene, in industrial life, such as department stores and factories, in the efficient care of the mentally deficient and the insane, calls for a special line of instruction dealing with social and economic problems as well as with sanitary conditions.

Course for Public Health Nurses.

The University of California has planned a course in the coming summer session which will offer an opportunity to registered nurses who are in public health service or those desiring to take up this class of work.

While this course does not aspire to cover the ground necessary for a general public health course, or to fully equip a nurse for this service, it will lead to the desire to study further and possibly be an influence in establishing a permanent and well-rounded course for public health nurses on our western coast.

Following is a synopsis of the announcement which will give an idea of the subjects covered which are of special value to nurses:

"In order to demonstrate the social aspects of public health and teach the essentials of public health necessary to social service, the following group of courses has been planned for social service workers, nurses and teachers of hygiene and physical education. It is believed that the opportunity given to correlate these various subjects on a broad general basis will lead persons trained for any one of these vocations toward a more sympathetic understanding of the problems of workers in the allied fields. The schedule of these courses has been arranged in order to avoid conflicts, thus furnishing an opportunity for completion of the entire group during the session."

A deposit of five dollars will be required from those electing the laboratory course. This amount, less breakage, will be refunded at the close of the session.

Essentials of Epidemiology. Assistant Professor J. N. Force, M.D.

A course in the etiology, transmission and control of the more prevalent communicable diseases. Monday, Tuesday, Wednesday, Thursday and Friday, 9 a. m. Two units. Hygiene and Pathology Building.

Hygiene for Women and Children. Adelaide Brown, M.D.

Lectures on the various applications of personal hygiene and public health to the welfare of women and children. Tuesday and Thursday, 10 a.m. One unit. Hygiene and Pathology Building.

Elementary Bacteriology. Dolores Bradley, B.S.

An introductory laboratory course in bacteriology, including preparation of culture media, isolation of organisms and the methods of studying them. Some of the commoner disease-producing bacteria will be considered briefly. Monday, Tuesday, Wednesday, Thursday and Friday, 1 to 5.30 p.m. Four units. Hygiene and Pathology Building.

Social Insurance in Relation to Public Health. Katherine Felton, B.L.

A course of lectures on the principles of insurance against accident, sickness, unemployment and old age, with special reference to insurance as a public health measure. Monday, Wednesday and Friday, 10 a.m. One unit. Hygiene and Pathology Building.

Social Aspects of Public Health.

A course of thirty lectures on the following subjects (five lectures will be given on each subject by an investigator or worker in the particular field covered by each subject): Housing, George L. Bell; Medical Social Service, Louise Morrow, A.B., M.D.; Welfare Work in Factory and Shop, Allan F. Gillihan, M.D.; Tuberculosis, Edith L. M. Tate, B.L.; Medical Inspection of Schools, Ernest B. Hoag, A.M.M.D.; The Health Visitor, Anna C. Jammé, R.N. Monday, Tuesday, Wednesday, Thursday and Friday, 11 a.m. Two units. Hygiene and Pathology Building.

Laboratory and Field Exercises in Public Health. Assistant Professor Force and Ida M. Stevens, A.B. Lectures, class excursions and individual field assignments in public health, together with the related laboratory. The course will be planned as far as possible to meet individual requirements. Monday, Tuesday, Wednesday, Thursday and Friday, 1 to 4 p.m. Three units. Hygiene and Pathology Building.

Research. Assistant Professor Force and Ida M. Stevens, A.B.

The Laboratory of Hygiene will be open during the session for research by properly qualified persons. Hours and credit to be arranged after consultation with the instructors.

LIST OF COUNTY AND CITY HEALTH OFFICERS.

Alameda County—
 Dr. C. L. McKown.....Niles
 Alameda.....Dr. A. Hieronymus
 Albany.....Dr. F. R. Woolsey
 Berkeley.....Dr. J. J. Benton
 Emeryville.....Dr. A. T. Drennan
 Hayward.....Dr. F. W. Browning
 Livermore.....Dr. J. K. Warner
 Oakland.....Dr. Kirby B. Smith
 Piedmont.....Dr. Benj. T. Mouser
 Pleasanton.....Dr. J. Hal Cope
 San Leandro.....Dr. Luther Michael
Alpine County—
 Mr. Fred S. Dunlap.....Markleeville
Amador County—
 Dr. G. L. Lynch.....Amador City
 Jackson.....George Hambric
 Sutter Creek.....W. A. Burres
Butte County—
 Dr. L. L. Thompson.....Gridley
 Biggs.....Geo. E. Harvey
 Chico.....W. H. Marshall
 Gridley.....Dr. L. Q. Thompson
 Oroville.....Dr. W. F. Gates
Calaveras County—
 Dr. George F. Pache, Angels Camp
 Angels Camp.....Dr. E. W. Weirich
Colusa County—
 Dr. G. W. Derosier.....Colusa
 Colusa.....Dr. G. W. Derosier
Contra Costa County—
 Dr. W. S. George.....Antioch
 Antioch.....Dr. W. S. George
 Concord.....Dr. F. F. Neff
 Hercules.....Dr. M. L. Fernandez
 Martinez.....Dr. Edwin Merrithew
 Pinole.....Dr. M. L. Fernandez
 Pittsburg.....Dr. H. E. Peters
 Richmond.....Dr. Chas. R. Blake
 Walnut Creek.....Dr. C. R. Leech
Del Norte County—
 Dr. E. M. Fine.....Crescent City
 Crescent City.....Dr. E. M. Fine
El Dorado County—
 Dr. L. M. Lelsenring.....Placerville
 Placerville.....P. J. Hall
Fresno County—
 Dr. G. L. Long.....Fresno
 Clovis.....Dr. M. S. McMurtry
 Coalinga.....Dr. C. W. Hutchison
 Firebaugh.....Dr. H. J. Greven
 Fowler.....Chas. Chapman
 Fresno.....Dr. A. H. Sweeney
 Kingsburg.....Dr. J. A. Gillespie
 Reedley.....Dr. J. D. Hare
 Sanger.....Dr. Thos. F. Madden
 Selma.....Dr. O. H. Steinwand
Glenn County—
 Dr. F. M. Lawson.....Willows
 Orland.....Dr. D. L. Martin
 Willows.....Dr. F. X. Tremblay
Humboldt County—
 Dr. Carl T. Wallace.....Eureka
 Arcata.....Dr. G. W. McKinnon
 Blue Lake.....Dr. Chas. N. Mooney
 Eureka.....Dr. L. A. Wing
 Ferndale.....Dr. J. A. Lane
 Fortuna.....Dr. Orville Rockwell
Imperial County—
 Dr. F. H. Carter.....El Centro
 Brawley.....S. A. Armstrong
 Calexico.....Dr. H. C. Richter
 El Centro.....Dr. F. A. Burger
 Holtville.....J. C. Nale
 Imperial.....Dr. C. E. Standlee
Inyo County—
 Dr. I. J. Woodin.....Independence
 Bishop.....Dr. C. E. Turner

Kern County—
 Dr. C. A. Morris.....Bakersfield
 Bakersfield.....Dr. P. J. Cuneo
 Delano.....
 Maricopa.....Dr. H. N. Taylor
 McKittrick.....Dr. W. H. Cook
 Taft.....Dr. F. C. Galehouse
 Tehachapi.....Dr. N. J. Brown, Jr.
Kings County—
 Dr. C. L. Scott.....Hanford
 Corcoran.....Dr. J. T. Peery
 Hanford.....Dr. B. Robbins
 Lemoore.....Dr. W. P. Byron
Lake County—
 Dr. W. E. Upton.....Kelseyville
 Lakeport.....P. H. Millberry
Lassen County—
 Dr. W. E. Dozier.....Susanville
 Susanville.....Dr. E. S. Drucks
Los Angeles County—
 Dr. J. L. Pomeroy.....Los Angeles
 Alhambra.....Dr. F. E. Corey
 Arcadia.....Dr. Chas. D. Gaylord
 Avalon.....Dr. J. J. Peckham
 Azusa.....Dr. L. W. Atkinson
 Beverly Hills.....Dr. Lowell G. Frost
 Burbank.....Dr. E. H. Thompson
 Claremont.....Dr. F. W. Thomas
 Compton.....J. W. Stone
 Covina.....Dr. J. D. Reed
 Eagle Rock.....Dr. C. H. Phinney
 El Monte.....Dr. S. L. Corpe
 Glendale.....Dr. R. E. Chase
 Glendora.....Dr. A. L. McCarty
 Hermosa Beach.....B. F. Brown
 Huntington Park.....Dr. W. Thompson
 Inglewood.....Dr. H. A. Putnam
 Long Beach.....Dr. R. L. Taylor
 Lordsburg.....Dr. J. E. Hubble
 Los Angeles.....Dr. L. M. Powers
 Manhattan Beach.....Llewellyn Price
 Monrovia.....Fred S. Whitcomb
 Pasadena.....Dr. Stanley P. Black
 Pomona.....Dr. N. J. Rice
 Redondo Beach.....Dr. D. R. Hancock
 San Fernando.....Dr. Benj. B. Ward
 San Gabriel.....Dr. Ruth Purcell
 San Marino.....
 Santa Monica.....Dr. Chas. G. Shipman
 Sawtelle.....Dr. A. B. Hromadka
 Sierra Madre.....Dr. R. H. Mackerras
 South Pasadena.....Dr. C. F. Metcalf
 Tropic.....Dr. Wm. C. Mabry
 Venice.....Dr. W. M. Kendall
 Vernon.....Dr. O. R. Stafford
 Watts.....Dr. E. J. Fische
 Whittier.....Dr. W. H. Stokes
Madera County—
 Dr. L. St. John Hely.....Madera
 Madera.....Dr. L. St. John Hely
Marin County—
 Dr. J. H. Kuser.....Novato
 Belvedere.....Dr. Florence Scott
 Larkspur.....Dr. J. E. McCue
 Mill Valley.....James V. Chase
 Ross.....Dr. Harry O. Lund
 San Anselmo.....Dr. O. W. Jones
 San Rafael.....Dr. W. J. Stone
 Sausalito.....Dr. A. H. Vance
Mariposa County—
 Dr. Paul C. Alexander.....Mariposa
Mendocino County—
 Dr. Judson Liftchild.....Ukiah
 Fort Bragg.....Dr. F. McLean Campbell
 Point Arena.....N. A. McCann
 Potter Valley.....L. H. Neil
 Ukiah.....Dr. J. Liftchild
 Willits.....Dr. F. C. Gunn